

# South of Tyne and Wear Clinical Pathology Services



Gateshead Health **NHS**  
NHS Foundation Trust







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# South of Tyne and Wear Clinical Pathology Services

## *Background*

Over a decade ago a national review of pathology services suggested that consolidation of hospital run laboratories could improve service quality, capitalise on diagnostic innovations and save up to £500m a year of total costs of £2.5bn. Given the potential benefits outlined by two reports from Lord Carter, it is surprising there has been limited movement towards the recommended consolidation.

In 2014, South of Tyne and Wear Clinical Pathology Services Managed Service network went live, bringing together an impressive, state of the art hub and spoke network, with the Pathology centre at Gateshead acting as a hub, and both City Hospital Sunderland and South Tyneside becoming spokes. The network provides an efficient centralised clinical pathology service, based on advanced automation and standardisation across sites. This integration has been achieved by superior transport and IT connectivity that incorporates systems, method and references ranges.

Prior to consolidation, the three independent laboratories were delivering traditional pathology services – histopathology, haematology, biochemistry and microbiology – but using different instruments, IT and procedures. However, it was acknowledged that the three laboratories could not continue to sustain themselves as individual entities. Workloads were unsustainable and the cost of constant modernisation was becoming prohibitive.

The new model was agreed – consolidation to a single site for the cold laboratories (non-urgent tests) and hot pathology (tests needed back within 90 minutes) done locally at each hospital.

In phase one, the focus was on agreeing what an ideal pathology service would look like. This took about a year and established the single site preference. Phase two took the project to outline business case – establishing 13 different work streams.





# South of Tyne and Wear Clinical Pathology Services

## Background

The tricky subject of location was only broached in phase three as the organisations moved towards full business case. In total, 26 options were considered – too many, the project team agreed in hindsight – and after an objective evaluation of the options available, Gateshead was agreed as the chosen location. The full business case was approved and signed off by each separate trust board and phase 4 (implementation) began.

Perhaps a key driver of the choice of location was the availability of a suitable building and site at Queen Elizabeth Hospital – an old warehouse that had housed a former laundry service. This meant the new centre could be established without disrupting the existing service, which was of paramount importance.

South of Tyne and Wear Clinical Pathology Services at Gateshead now serves as a success story as to how Lord Carter's reforms can be achieved. The site now provides a fully integrated, 24/7 service, processing over 10,000 samples a day for the local population.

### **Reflecting on the transformation, Chris Charlton Pathology Service Manager, said:**

*“Consolidation of services across multiple organisations is not an easy process. It requires the coming together of many different cultures, the adoption of a common goal, the diplomacy skills of a United Nations envoy, and maintaining the support of management, staff and suppliers. However, ultimately, all of the hurdles are surmountable and that reconfiguration is worth the effort. By keeping the patient at the heart of the effort, you are quickly able to focus on what really matters and can now offer our patients a state-of-the-art service as a result.”*





# South of Tyne and Wear Clinical Pathology Services

## *Key Facts*

### State-of-the-art laboratory automation

The site was one of the first in the UK to install the **cobas®** 8100, the high throughput automated workflow series from Roche. Providing reliable, fully automated, end-to-end sample processing, this cutting edge technology allows the laboratory to ensure rapid, predictable turnaround times and high quality analytical results.

It is also an early adopter in the latest innovations from Roche, including the **cobas®** c 513 analyser, a dedicated high throughput HbA1c solution designed to cope with the increasing HbA1c testing volume.

### Flexible and scalable testing solution

The site opened in 2014 and immediately faced increasing workloads from primary care – which typically accounts for 50-60% of the estimated £2-2.5bn total pathology service costs. With modular, scalable solutions provided by Roche – the South of Tyne and Wear Clinical Pathology Services has the flexibility to cope with increased demand and can further expand the service that it provides.

For additional flexibility, both Roche, and third party equipment, is provided under a Roche Optima// Managed Pathology Service.

### Meeting clinical needs

The combination of Roche's enhanced automation and the largest clinical chemistry and immunoassay test menu available in the marketplace means that South of Tyne and Wear Clinical Pathology Services is able to meet, and exceed, the demands of their clinicians for faster diagnosis and monitoring of patients. Indeed, the laboratory has seen a dramatic reduction in turnaround time for routine blood samples down from averaging four hours, to one hour five minutes.





# South of Tyne and Wear Clinical Pathology Services

## Overview

The South of Tyne and Wear Clinical Pathology Services serves a total population size of over nine million across the wider Newcastle area, and will process over five million patient samples each year. Typical of many inner cities laboratories, the pathology service is facing increasing demands due to the region's aging population, with a growing number of long-term health conditions, and increasing levels of deprivation.

*The network services the pathology needs of primary and secondary care in the catchment areas of:*

### **Gateshead Health NHS Foundation Trust (hub)**

Providing a wide range of services across three hospital sites:

- Queen Elizabeth Hospital
- Bensham Hospital
- Dunston Hill Hospital

### **City Hospitals Sunderland NHS Foundation Trust (spoke)**

Providing services such as A&E, surgical and medical specialties, therapy services, maternity and paediatric care from three hospital sites:

- Sunderland Royal Infirmary
- Sunderland Eye Infirmary
- The Children's Centre, Durham

### **South Tyneside NHS Foundation Trust (spoke)**

Providing services such as A&E, antenatal and maternity, cancer, and paediatric care from four hospital sites:

- South Tyneside District Hospital
- Palmer Community Hospital
- Primrose Hill Hospital
- Monkton Hall Hospital





# South of Tyne and Wear Clinical Pathology Services

*Interview with Chris Charlton,  
Pathology Service Manager*

## **Q. What are the main pressures currently facing the pathology service at Gateshead?**

Definitely meeting the activity demand, which within the GP setting is increasing at a rate of between 10-12% a year. This is predominantly due to the ageing demographic of the local population, resulting in a higher number of tests being required per annum. In addition, across Newcastle we have an increasing population, and relatively high levels of deprivation. As a service, it is vital that we continue to meet the needs of those using our service while also balancing this to ensure we maintain levels of efficiency.

## **Q. What have been the benefits of working with Roche during and after the consolidation?**

During the consolidation Roche was extremely supportive by allowing us to bring the refresh of our equipment forward in line with the opening of the new facility. This saved us the huge expense of transporting existing equipment to the new site, and also allowed us to maintain a 24/7 service without interruption during the transition.

As for continuing the partnership, Roche was the obvious choice. Roche Diagnostics is a key partner for us as an organisation, as their vision and future strategy is truly aligned with our vision of a 21st century laboratory service.

## **Q. What is it about Roche's offering that made them your partner of choice throughout this process?**

Roche is more than just an equipment provider, and it's the continuous support it offers throughout that makes it the partner of choice. This includes pathway redesign, reconfiguration of the lab, as well as support with the more commercial aspects of the laboratory. The provision of high quality financial information through its Optima// Service, has also been a real asset in terms of achieving efficiencies and also ensuring that we are able to meet future demands.





### **Q. What has been the impact of the consolidation on your day-to-day service?**

From the requester's perspective, the impact has been quite dramatic in terms of the fact they are now receiving a service from a totally different provider. We have worked hard to earn their trust but have also had to learn a lot in terms of the best way to deliver a remote service. The consolidation has also allowed us to share best-practice across hospital sites more easily. For example, there was a better blood transfusion policy in Sunderland, which has since been replicated across the two other hospitals.

Because we have a much bigger laboratory now, we also have the critical mass needed to offer more tests in-house, with a better turnaround time, and can offer a fuller experience for the Biomedical Scientists, so that they get to experience new techniques that they didn't previously do.

### **Q. Have the efficiencies you hoped to achieve been realized?**

When we started out, we documented exactly what we hoped to achieve in a full business case and so far, we have hit all of the milestones in relation to the cost efficiencies. We're pretty much on track and in some areas we are ahead of that timescale.

### **Q. What advice would you give to other services undergoing consolidation?**

It's a massive challenge to bring together organisations whose service has evolved over 50-60 years to meet the roles of their local clinicians, so it is important to be prepared and expect the unexpected. When you make assumptions, they almost always turn out to be incorrect, and when you think something will be straightforward, it is almost always ends up being extremely complicated.

The main thing to remember is that the quality of your service isn't just about the building or the equipment, but also down to the quality of your staff. Taking people with you and supporting your staff throughout the consolidation is essential to improving your service.

### **Q. What is next for the pathology service at Gateshead? Do you have a vision for the service in 10 years' time?**

In ten years' time technology would have changed radically, and the makeup of a centralised laboratory will have to be continuously evolving to keep up. There will also be greater automation, with more walk away time, more stable reagents, and greater connectivity which means that results can be accessed automatically from anywhere within the network.

In pathology we still don't fully leverage the technology available to us. In the future, patients will have apps on their phone that will enable them link in directly with the healthcare system and enable better self-management. Chronic disease management will also become much more in the hand of the individual patient. This will also enable us to more appropriately manage demand, and having direct access to results will mean that the healthcare system only intervenes when necessary.





# South of Tyne and Wear Clinical Pathology Services

## *Pathology Services Overview*

South of Tyne and Wear Clinical Pathology Services provides high quality, 24/7 analytical services to hospital doctors, GPs and patients within the catchment areas of the hub - Gateshead Health NHS Foundation Trust - and the spokes - City Hospitals Sunderland NHS Foundation Trust and South Tyneside NHS Foundation Trust.

### **Optima// Managed Pathology Service Solution**

The Optima// Managed Pathology Service is a long term partnership based on excellent two-way communication and the sharing of a common vision for future service development. It provides a granularity of detail, that enables the service to adapt to changing demands whilst continuing to improve testing efficiency.

South of Tyne and Wear Clinical Pathology Services is seven years into a successful Roche Optima// Managed Pathology Service and has recently chosen to extend this for a further seven years based on the successful partnership working between the two organisations.

In addition to the supply of Roche products, the Optima// agreement includes a wide variety of equipment and products from 21 different supplier. The Optima// agreement ensures that laboratory administration and invoicing for the full network is vastly reduced as all contact with third parties is undertaken by Roche and included in the monthly Optima// fee. Additionally, where required the contract has allowed for capital investment to facilitate the transition to new equipment.

Optima// Managed Pathology Service benefits include:

### **Management Reports**

Laboratory and pathology services across the country are under increasing pressure to achieve efficiencies. Responding to this pressure, Roche Diagnostics has developed a unique offering: providing customers with an unparalleled understanding of their laboratories budget and performance.

Based on novel informatics, Roche's Commercial Management Department captures the financial status of the whole contract, including third party elements, supplier performance, and operational efficiency.

Data is collected on a routine basis to allow for timely feedback and forecasting, enabling laboratories to control costs, drive out inefficiency and prepare for changing demands.





# South of Tyne and Wear Clinical Pathology Services

## *Pathology Services Overview*

### **Quarterly Review Meetings**

Quarterly meetings with Roche are scheduled within the agreement and provide the platform to ensure capacity is reviewed systematically and optimal assay distribution across the system is achieved.

The meetings give the department the opportunity to review financial, technical and KPI performance. The objective and evidence-based review of both first and third party suppliers formalises management process and establishes a structure for continued quality improvement.

See appendix for full details of equipment provided under the Optima// Managed Pathology Service.

### **Biochemistry**

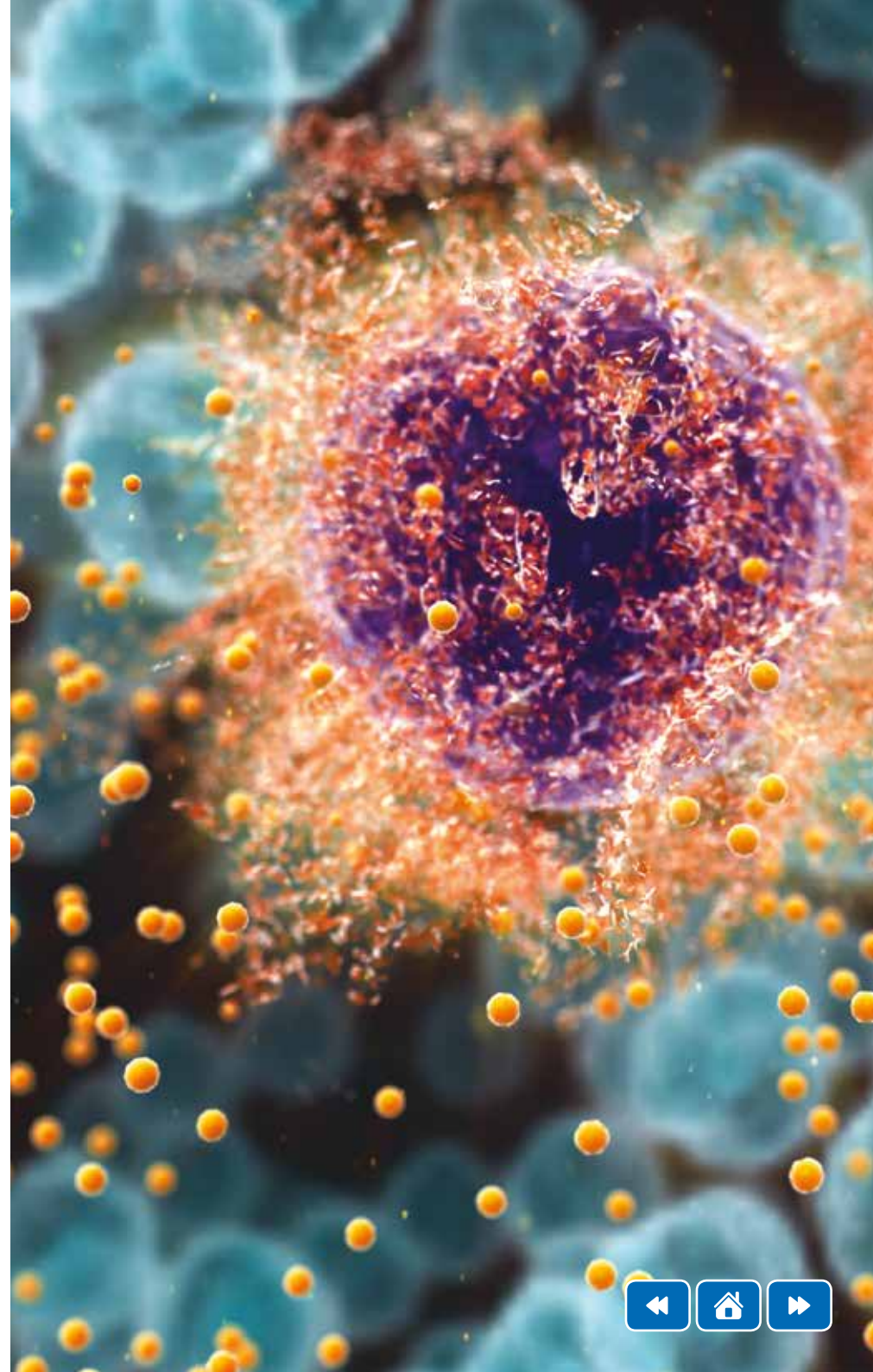
The Biochemistry Department forms an integral part of the clinical pathology services offering and covers both the hospital trust and the health community. The department aims to provide a 24/7 routine and emergency diagnostic service with the majority of investigations being carried out in-house.

The department is dedicated to providing the highest quality analytical service possible and is equipped with the latest Clinical Chemistry and Immunoassay analysers.

### **Haematology, Blood Transfusion and Immunology**

The Haematology, Blood Transfusion and Immunology Departments are equipped with the latest analysers capable of performing routine Haematology, Coagulation and Immunological testing.

The Blood Transfusion Section provides advice on and supplies blood and blood components for all patients requiring these products. It also provides routine and out of hours blood for two local private hospitals. Clinical advice and interpretation of results may be obtained by telephone.





# South of Tyne and Wear Clinical Pathology Services

## *Pathology Services Overview*

### Microbiology

The Microbiology Department provides a rapid, comprehensive, high quality diagnostic service for both routine and urgent requests.

The department is equipped with the latest automated systems available to microbiology for blood cultures, serological assays and nucleic acid detection. Clinical advice on interpretation of results, appropriate antibiotic therapy, infection control and other relevant investigations, is always available.

More recently the service has also introduced a fully automated culture system, and a MALDI TOF mass-spectrometer.

### Cellular Pathology

The Cellular Pathology Department encompasses Histopathology, Cytopathology and Mortuary services.

By creating an entirely centralised and consolidated Histopathology service at Gateshead, the network was able to move from multiple suppliers to a single Roche solution that still offers a comprehensive range of immunocytochemical and histochemical stains, using the VENTANA HE 600, and VANTAGE systems. The department also hosts a microwave processor for rapid processing of urgent specimens in particular for the colposcopy one-stop clinic, alongside a frozen section service. In addition, facilities exist for digital photography at both macro and microscopic level, while an automated immuno-centralised testing service provides the IT to enable remote viewing of slides for faster patient diagnosis across the sites.

Cytopathology is split into two functional areas and provides both non-gynaecological and gynaecological reporting services. It also includes immediate reporting of cytology for breast, technological support for ultrasound, CT and X-ray guided FNAs and a Semenology service.

The Mortuary acts as a public mortuary for the district with the Cellular Pathology Department providing a post mortem service for the Queen Elizabeth Hospital and for HM Coroner, South of Tyne.





# South of Tyne and Wear Clinical Pathology Services

## *Pathology Services Overview*

### **Bowel Cancer Screening Hub**

The Bowel Cancer Screening Hub provides bowel cancer screening for a population of 800,000 people, as part of the National Screening Programme across the North East.

### **Pathology Point of Care Support**

In addition, the department forms the focus for the delivery of the multidisciplinary Pathology Point of Care Support. The Point of Care testing repertoire includes Blood Gas analysis, Blood Glucose meters and Urinalysis facilities. Advice on interpretation of results and other relevant investigations is always available.

Full details of the workload statistics can be found in the appendix.

### **Technical Services**

Roche understands the challenges faced by healthcare professionals in this ever-changing environment. It's widely recognised that the introduction of new technology advances our diagnostic abilities and supports healthcare development. It does, however, also require new learning and the adoption of new ways of working for the laboratory team.

Roche is dedicated to supporting laboratory teams through these changes. It is continuously improving its services so that it offers a proactive – not just reactive – technical service. As a result, Roche-supported laboratory networks are able to run a sustainable laboratory service, providing enhanced diagnostic support and delivering better patient outcomes.

Delivering a premium technical service relies on cooperation and teamwork. Our every interaction with you is supported by a culture of openness and transparency. By discussing, understanding and engaging with the details of your projects together we achieve great results.

Roche operates stringent quality control processes that ensure all work is carried out to the highest possible standards. For both laboratory and Roche teams, a shared goal of ensuring service continuity leads to strong trusted relationships.





# South of Tyne and Wear Clinical Pathology Services

## *Roche Equipment and Software*

The Pathology Centre is equipped with the following Roche equipment and software:

### Pre and Post Analytics

#### **cobas® 8100 automated workflow series**

The **cobas** 8100 autonomously manages all the operative pre-analytical steps of a professional laboratory. Achieving a throughput of 1,100 samples per hour, the system is designed with options for connectivity to Serum Work Areas analysers, haematology, coagulation, selective third-party analysers and archiving.

#### **cobas® p 501 post analytical unit**

The **cobas** p 501 automates sample archiving, retrieval and disposal, with a fridge capacity for up to 13,500 samples.





# South of Tyne and Wear Clinical Pathology Services

## *Roche Equipment and Software*

### **Analytics**

#### **cobas® 8000 modular analyser series**

With a peak throughput of 8,400 tests per hour, the **cobas** 8000 modular analyser series is designed for high workload laboratories. The configuration at the South of Tyne and Wear Clinical Pathology Services includes **cobas** c 702 x 5, **cobas** e 602 x 7.

#### **cobas® c 513 analyser**

The **cobas** c 513 is a dedicated high throughput HbA1c solution designed to cope with the increasing HbA1c testing volume. The analyser offers a fully automated and highly efficient workflow by delivering up to 400 patient results per hour, yet requiring minimized operator intervention from sample registration to result delivery.

### **cobas® IT solutions**

#### **cobas® IT middleware**

**cobas** IT middleware allows management and monitoring of all sample and QC workflows until the final patient result is reported. It operates as the network's single process management platform providing them with full process control of their automated sample workflow, throughout the pre-analytical, analytical and post-analytical phases.

By consolidating and managing data from different systems, **cobas** IT middleware aids compliance with constantly evolving standards and meet demands for faster turnaround times and greater reporting accuracy.

#### **cobas® Link**

The remote diagnostics connection is made through the NHS N3 network and allows front line Roche support personnel to screen share remotely with the PC of each individual instrument line within the laboratory which provides the ability to monitor systems, up load and down load of data and re-configure settings as required.





# South of Tyne and Wear Clinical Pathology Services

## *Roche Equipment and Software*

### Molecular

#### **cobas® 4800 system**

A customisable modular high throughput solution for innovative, reliable and efficient molecular diagnostics. The real-time PCR technology of the cobas 4800 meets international guidelines for sensitivity and linear measurement range. AmpErase prevention of enzyme contamination, use of internal controls and automation ensures reliable results.

### Point of Care

#### **Accu-Chek Inform Meters**

The Accu-Chek Inform II system helps nursing staff to do the right glucose test on the right patient at the right time. It is a user-friendly hand-held system for point-of-care glucose testing and monitoring. There are over 250 meters in use across the three hospital sites. Roche Performa meters (unconnected devices) are also in use within the patient population/community.

#### **cobas® IT 1000**

**cobas** IT 1000 links POC devices and results to enable capture and result reporting via the laboratory computer system. This information then populates the pathology patient record to ensure that a more complete picture is available to clinicians. It also helps to manage user competency as part of regular user assessments which are essential for controlling access to remote devices which is in line with governance standards.





# Strategic Services

Partnering at Roche builds on our culture, one in which we listen carefully to our partners and then creatively structure a collaboration that meets both parties' needs.

Key members of the Roche team have worked collaboratively with Gateshead NHS Trust to assist with the effective delivery of strategic goals.

Roche aims to create value for your organisation and your patients, by equipping you with up to date information, evidence, tools, services and support to meet increasing expectations and demands and to optimise patient management through our diagnostics portfolio and those of our Managed Service Partners.

Here, we outline how we have worked with Gateshead NHS Trust to develop a partnership that supports long terms goals, for better patient outcomes.

1. Adoption of innovative new tests/assays and technology

2. Tender workshops/bid support for Trust team to drive business development

3. Service and consultancy

Chris Carlton explains, "The Roche team has ensured that we remain informed about new products, tests and IT systems, helping us to look at ideas that can improve our service to the patient and develop a lab portfolio that keeps us future proofed. These include:-

- take advantage of developments within clinical testing technologies
- leverage the capacity and capability of our lab
- project a positive image to staff, clinicians, customers and commissioners
- increase referrals and market penetration
- capitalise on new business opportunities available to expand our volumes

We have worked with the Roche team to set strategic objectives to achieve this, which include novel technologies, changes in patient pathway, process enhancements, marketing initiatives, speaker platforms, PR, training and business development opportunities.

Chris added "With so much change going on across the NHS, it has been a real help to have this strategic support from Roche. They have given us a different perspective and helped us review some of the themes in our Sustainable Transformation Plans (STP) and how we can deliver an even greater service in the future, further driving quality and efficiency savings.

Together, I feel that we have an ongoing commitment to innovation and continuous improvement supported by a focused approach to a key project each year, throughout the life of our contract."





# Appendix

*Instruments which have been fully implemented on the basis of a signed acceptance form*

## Queen Elizabeth Hospital

Instrument Supplier	Model
Roche Pre/Post-Analytics	cobas 8100
	cobas p501 x 2
Roche Chemistry	cobas 8000 c 702 module x 5
	cobas c 513
Roche Immunoassay	cobas 8000 e 602 module x 7
Roche Molecular	cobas 4800
	LightCycler 480 II, 96
Roche Tissue	Benchmark Ultra
	Benchmark XT
	Benchmark Special Stains
Roche Blood Glucose	Accu-Chek Inform Meters
BD	BarcodA
	SorterA
	Inoqua FA
	Inoqua SA
	ProceedA TLA-8
	ReadA Compact Incubator
	ReadA Compact Incubator
	ReadA Compact Incubator
	ReadA Compact Incubator
	ReadA Compact Incubator

Instrument Supplier	Model
BioMerieux	BacT/ALERT 3D 480
	BacT/ALERT® 3D 720 System
	Sysmex UF - 1000i
	Sysmex UF - 1000i
	VIDAS V30
	VIDAS® 30 System
	VITEK® 2 XL 120 System
	Mini Vidas
	Mini Vidas
	easyMag
Bruker	VITEK 2 XL
	Maldi Biotyper
Cecil	Maldi Biotyper
	Spectrophotometer
Diamed	IH100
Werfen	ASP 1200
	ASP 1200
	Nova View



# South of Tyne and Wear Clinical Pathology Services



## Gateshead Map

Queen Elizabeth Hospital  
Queen Elizabeth Avenue  
Sheriff Hill  
Gateshead NE9 6SX

Switchboard: 0191 482 0000  
Website: [www.qegateshead.nhs.uk](http://www.qegateshead.nhs.uk)

### Car Parking:

There are pay and display car parking facilities at the site - please bring change. Please ensure that valuables are kept locked out of site.

### Private and confidential

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