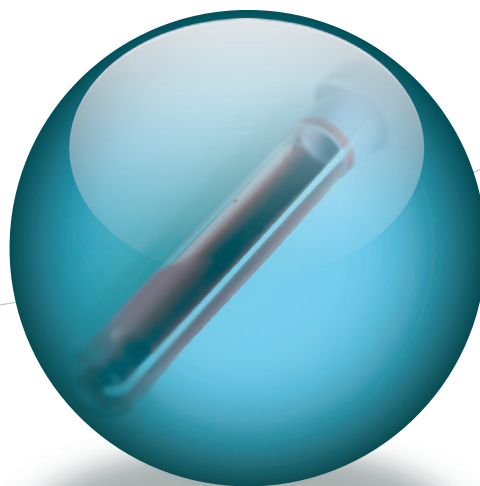
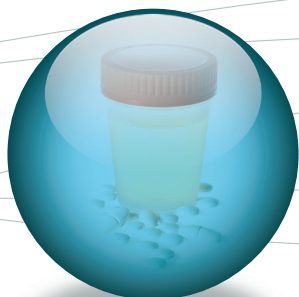
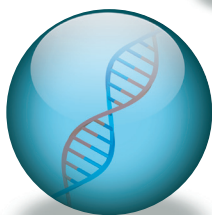


Clinical and forensic toxicology proficiency testing (EQA) catalogue 2011/2012



Contents

Introduction

- Promoting excellence through proficiency testing 3
- Aim of proficiency testing 3
- Quality standards 3
- Benefits of proficiency testing 4
- Who should participate in proficiency testing schemes? 4
- Who participates in LGC Standards proficiency testing schemes? 4
- Why choose LGC Standards as your proficiency testing provider? 4
- Why do I need proficiency testing? 4
- PT/EQA schemes for clinical and forensic toxicology 5
- Benefits of participation in HEATHCONTROL PT/EQA schemes 5

Clinical and forensic PT schemes

- HEATHCONTROL – Therapeutic Drug Monitoring (TDM) 6
- HEATHCONTROL – Toxicology (TOX) 8
- HEATHCONTROL – Drugs of Abuse in Urine (DAU) 9
- HEATHCONTROL – Drugs in Oral Fluid (DOF) 10
- QUARTZ – Forensic blood toxicology scheme 11
- FORENSICS PT trial scheme 12
- Confidentiality 13
- Reports 13
- Other PT services 13
- Product development 13
- Reference materials 14
- Summary 14



LGC Standards

Promoting excellence through proficiency testing

LGC Standards is an accredited international provider of proficiency testing (PT) services also known as External Quality Assessment (EQA). We have over twenty five years experience in all aspects of providing PT services to laboratories undertaking clinical, chemical, microbiological, and physical measurements.

LGC Standards operates 39 proficiency testing schemes serving more than 7,000 laboratories. We produce in excess of 100,000 test materials which are distributed to over 140 countries worldwide.

We offer an unprecedented breadth of clinical, chemical, microbiological and physical testing schemes across a wide range of industries including clinical and forensic, pharmaceutical and phytochemical sectors, meat, dairy and other food sectors, water, soil and other environmental sectors, brewing, distilling, malting, sugar and other beverage sectors, cosmetics, toys and other consumer safety sectors.

In addition to the variety of schemes offered, LGC Standards can also provide managed solutions for in-house proficiency testing providers and training for participants and their customers.



Aim of proficiency testing

Proficiency testing is defined in ISO/IEC 17043 as the evaluation of participant performance against pre-established criteria by means of interlaboratory comparisons. The terms “External Quality Assessment or EQA” are often used for proficiency testing in the medical/clinical area.

LGC Standards Proficiency Testing provides a wide range of schemes designed to improve the quality of analysis in those sectors covered. The schemes involve the regular distribution of test materials in order for participants to test for defined parameters, and to have their results statistically analysed. Participation provides laboratories with a means of assessing the accuracy and comparability of their results with peer laboratories over time.

When performed within the context of a comprehensive quality assurance programme, proficiency testing is an independent means of assuring the quality of test and calibration results, as described in ISO/IEC 17025 and ISO 15189.

Quality standards

LGC Standards Proficiency Testing is committed to continual improvement in quality and efficiency through procedures based upon quality assurance. This commitment is demonstrated through certification to ISO 9001 for all its activities and accreditation to ISO/IEC 17043 for the operation, management and design of proficiency testing schemes. LGC Standards Proficiency Testing is accredited by the United Kingdom Accreditation Service (UKAS, certificate number: 0001). Clinical schemes are currently accredited to the UK Clinical Pathology Accreditation (CPA) guidelines reference number 028/0054, 0028/0055, 028/0060, 028/0315. A copy of our current scope of accreditation is available on our website: www.lgcpt.com

Benefits of proficiency testing

Proficiency testing is an essential laboratory tool as it demonstrates a laboratory's commitment to good performance and enables participants to confirm their ability to perform tests competently; essential in the laboratory accreditation process.

Participation in proficiency testing will:

- Enable participants to measure their performance against others.
- Give an early indication of potential problems or training requirements.
- Encourage good performance and reinforce an interest in quality assurance.
- Demonstrate an ability to comply with international regulations.
- Provide a valuable source of information.
- Provide the means to measure consistency across a group of laboratories.

Who should participate in proficiency testing schemes?

Anyone who needs to independently demonstrate the quality of their analytical results should participate in PT/EQA schemes - because quality of results relates directly to quality of product, reputation in the market and, ultimately, brand value. Whether operating in the clinical, forensic, food, pharmaceutical, beverages, environmental monitoring or other sectors, many regulators view PT schemes as an essential part of quality monitoring and many laboratories link PT results to key performance indicators in the quality assurance process.

Who participates in LGC Standards proficiency testing schemes?

LGC Standards exports to laboratories in over 140 countries world-wide and our customer base ranges from single small enterprises to inspection organisations of global repute. Our customers include hospitals and clinics, pharmaceuticals companies, government agencies, major international food manufacturers, research organisations, commercial and contract laboratories. At present we have over 7,000 participants across the 39 schemes currently in operation.

LGC Standards manages a number of bespoke schemes for multi-national companies to meet their particular requirements. These special schemes cover up to 200 laboratories.

Why choose LGC Standards as your proficiency testing provider?

- Access to a wide range of schemes from a single supplier.
- Rapid turnaround of results.
- Access to expert support and advice.
- Local representation and support.

Why do I need proficiency testing?

Accreditation bodies strongly recommend that laboratories participate in appropriate PT schemes as they are the only quality tool which can assess the whole quality system. PT is a truly independent measure of laboratory performance and anonymously compares performance with peer laboratories. It allows the laboratory to compare and contrast the performance of analytical methods and can assist in the validation of new methods. Participation in a PT scheme is educational and can be used as a tool for staff training, allowing laboratories to learn from both positive and negative performance.

PT/EQA schemes for clinical and forensic toxicology

LGC Standards, recently acquired Cardiff Bioanalytical Services Ltd and now operates the range of HEATHCONTROL (EQA) schemes for laboratories and screening clinics covering:

- Therapeutic Drug Monitoring (TDM).
- Toxicology (TOX).
- Drugs of Abuse in Urine (DAU).
- Drugs in Oral Fluid (DOF).

The definitive aim of PT/EQA schemes in a clinical setting is improvement in analytical performance in support of improved patient care.

Benefits of participation in HEATHCONTROL PT/EQA schemes

HEATHCONTROL is a respected name in the field of EQA with over 450 participants in more than 36 countries.

By participating in the HEATHCONTROL schemes each participant gains the benefits of a global proficiency testing scheme:

- The schemes are a truly independent assessment of measurement quality, which enables laboratories to demonstrate their competence and compliance with respect to regulatory standards.
- Performance assessments obtained in the schemes are recognised as a demonstration of laboratory quality by a range of 'third parties', such as, customers, regulators and accreditation bodies.
- The comprehensive scheme reports provide invaluable feedback on laboratory performance and are widely used as a training tool for laboratory personnel.
- Performance assessment by method provides a mechanism for laboratories to compare their measurements with others using similar techniques and assists in the evaluation and development of methods and instrumentation.
- Wide variety of analytes from one supplier for all your needs.
- Significant numbers of participants worldwide means statistically robust results.



HEATHCONTROL – Therapeutic Drug Monitoring (TDM)

The Therapeutic Drug Monitoring (TDM) scheme is designed to provide an independent performance assessment for laboratories and clinics who are involved in the routine quantification of therapeutic drugs in serum. The TDM scheme is fully accredited in the U.K. by Clinical Pathology Accreditation (CPA).

TDM is the measurement of specific drug levels (concentrations) at timed intervals in patients, usually through blood samples, and is necessary where control of drug concentrations is required to achieve optimum treatment for the patient.

For most drugs, monitoring is not required as they have a wide therapeutic index i.e. the difference between a therapeutic and toxic concentration is large. Therefore, most individuals will be effectively treated without extreme side effects or symptoms of toxicity.

However, drugs with a narrow therapeutic index may result in a high or low serum concentration if not monitored and controlled. Drug concentrations in the bloodstream that are too high have the potential to exert adverse effects associated with toxic or even fatal consequences. Drug concentrations below the therapeutic index can lead to poor response to treatment. For some drugs, maintaining this steady state is not as simple as giving a standard dose of medication.

There are many factors which influence an individual's serum drug levels, these include but are not restricted to the age, sex, and weight of the patient; the route of administration of the drug; the drug's absorption rate, excretion rate, delivery rate, and dosage; other medications the patient is taking; pregnancy, temporary illness, infection, emotional and physical stress, trauma, and surgery; the patient's compliance regarding the drug treatment regimen; and the laboratory methods used to measure the drug. Effective TDM follows these changes and tailors the dosages to fit the current needs of the specific patient.

Drug concentrations in serum or whole blood are only meaningful if the correct procedures are followed regarding the timing of specimens. Failure to meet these requirements accounts for most errors in TDM. It is very important to note the exact time the sample is taken and when each dose of the drug is given as it allows for accurate interpretation of the measured levels and the patient's response to their dosing regimen.

Although serum drug concentrations and the therapeutic interval are useful in evaluating drug therapy, they should not be the only criteria on which treatment is based. Therapeutic drug monitoring is a multidisciplinary function, requiring collaboration between scientists, clinicians, nurses and pharmacists in order to ensure that best practice in TDM is achieved. The team must remember to always treat the patient, not the level.

The full range and availability of test materials in TDM is determined on an annual basis and further details can be found in the TDM application form and scheme information document.

Test material	Analytes
Human serum: Therapeutic 15 analyte drug mixture	Caffeine, Carbamazepine, Carbamazepine 10, 11-epoxide, Clonazepam, Digoxin, Ethosuximide, Gentamicin, Lamotrigine, Lithium, Phenobarbital, Phenytoin, Primidone, Theophylline, Valproate, Vancomycin.
Human serum: Anti-epileptic drugs	Clobazam / Norclobazam.
Human serum: Newer anti-epileptic drugs AE1 mixture	OH-oxcarbazepine, Gabapentin, Levetiracetam, Pregabalin.
Human serum: Newer anti-epileptic drugs AE2 mixture	Felbamate, Lacosamide, Rufinamide, Tiagabine, Topiramate, Vigabatrin, Zonisamide.
Human serum: Cardiac drugs mixture	Amiodarone, Desethylamiodarone, Flecainide.
Newborn calf serum or Human serum: Psychoactive drugs	Amitriptyline / nortriptyline, Clomipramine / norclomipramine, Clozapine / norclozapine, Imipramine / desipramine. Amisulpride, Aripiprazole / dehydroaripiprazole, Citalopram / norcitalopram, Doxepin / nordoxepin, Doxepin / nordoxepin, Fluoxetine / norfluoxetine, Fluphenazine, Fluvoxamine, Haloperidol, Maprotiline / normaprotiline, Mirtazapine / normirtazapine, Olanzapine, Paroxetine, Perphenazine, Quetiapine, Risperidone / HO-risperidone, Sertraline / norsertraline, Thioridazine, Trimipramine / nortrimipramine, Venlafaxine / norvenlafaxine, Zuclopenthixol.
Human serum: Anti-cancer drug	Methotrexate.
Human serum: Antibiotic drugs*	Amikacin, Chloramphenicol, Flucytosine, Gentamicin with vancomycin, Netilmicin, Teicoplanin, Tobramycin.
Human blood/plasma: Immunosuppressive drugs**	Cyclosporin, Everolimus, Mycophenolate, Sirolimus, Tacrolimus.



Note: Test materials and analytes may be added or removed, please see current application form.

*These analytes are produced in collaboration with UKNEQAS scheme for antibiotic drugs.

**Please note this is not a HEATHCONTROL scheme and as such is not covered by the LGC Standards scope of accreditation. It is managed and operated by ASI Ltd. Participants may subscribe to the scheme through LGC Standards.



Accredited EQA Scheme
Reference No:028/0055

HEATHCONTROL – Toxicology (TOX)

The Toxicology (TOX) scheme is designed to provide an independent performance assessment for laboratories and clinics that provide a pathology service, toxicological service, or forensic investigation service for drug and ethanol determination. The TOX scheme is fully accredited in the U.K. by Clinical Pathology Accreditation (CPA).

Drug and alcohol analyses may be undertaken for a variety of reasons which include but are not restricted to:

- Determine whether an individual is under the influence of alcohol and/or drugs that may require treatment or interfere with any medical care necessary (These analyses are usually required quickly in order to facilitate effective medical treatment).
- Determine whether an individual is under the influence of alcohol and/or drugs which may put their own life or that of others at risk whilst at work.
- Determine whether an individual may have been affected by alcohol and/or drugs whilst either a victim or a suspect in a criminal offence.
- Determine whether alcohol and/or drugs may be implicated in a death.

Toxicological analyses may be undertaken on a number of biological specimens, predominantly blood, serum and urine. In general, analyses are commonly undertaken for a range of prescription and non-prescription drugs, illegal drugs and alcohol. The aim of the analyses is to establish the identity of any substances present and at what quantity, and to then determine what effect the substance(s) identified may have had on the individual. The analytical findings would then be subject to interpretation by a suitably qualified individual.



Accredited EQA Scheme
Reference No:028/0054

The TOX scheme provides a range of test materials suitable for a variety of clinical and forensic settings:

- Serum, blood and urine. The blood and serum specimens contain ethanol, paracetamol and salicylate (the blood also contains carboxyhaemoglobin). The urine contains alcohol only. These are result driven samples and no interpretation is required.
- Case study. A case study is provided along with relevant serum and urine specimens. Participants analyse the specimens and submit the analytical findings along with the relevant interpretation, which is then marked by an independent scoring panel.
- Toxicological quantitative specimens. Blood test materials containing variable drugs and compounds that may be monitored in cases of possible drug overdose.

The full range and availability of test materials in TOX is determined on an annual basis and further details can be found in the TOX application form and scheme information document.

Test material	Analytes
Human serum	Ethanol, Paracetamol, Salicylate.
Blood	Carboxyhaemoglobin, Ethanol, Paracetamol, Salicylate.
Urine	Ethanol.
Human serum and urine	Various analytes with clinical or forensic scenario.
Blood toxicology analytes	Antipsychotics, Benzodiazepines, Opiates, Opioids, Selective Serotonin Re-uptake Inhibitors (SSRIs), Tricyclic antidepressants, and other drugs of interest.

Note: Test materials and analytes may be added or removed, please see current application form.



HEATHCONTROL – Drugs of Abuse in Urine (DAU)

The Drugs of Abuse in Urine (DAU) scheme is designed to provide an independent performance assessment of laboratories and clinics that provide routine services for detection of drugs of abuse in urine. The DAU scheme is fully accredited in the U.K. by Clinical Pathology Accreditation (CPA).

Human urine has been used for many years to detect the presence of frequently abused drugs. A urine drug test may be undertaken when ordered by a doctor to monitor a known or suspected substance abuse patient, and whenever a person has symptoms that suggest drug use. Urine drug tests may be requested for a variety of reasons, including occupational monitoring, insurance screening, legal and forensic purposes and in sports.

For most drugs of abuse testing, results of initial screening testing are compared with a predetermined cut-off. Anything below that cut-off is considered a negative result. A negative result does not necessarily mean that the person did not take a drug at some point, only that the drug was not present at a concentration greater than the reporting threshold. Anything above the cut-off is considered a positive result. If the sample is confirmed as positive after secondary testing then a “detected” finding is reported.



Drug testing is extremely accurate and reliable when all aspects of the testing process are carried out correctly. However, if poor procedures and inadequate testing methods are utilised, the information obtained may be very misleading and inaccurate. In order to minimise this risk, clinical laboratories should perform routine quality control tests and participate in suitable PT/EQA schemes.

The full range and availability of test materials in DAU is determined on an annual basis and further details can be found in the DAU application form and scheme information document.

Test material	Analytes
Urine test materials obtained from volunteers, patients and known drug users which regularly contain mixtures of drugs and their metabolites from six major classes	Amfetamines & stimulants, Cannabinoids, Cocaine & metabolites, Minor tranquillizers, Non-opiate narcotics, Opiates.

Note: Test materials and analytes may be added or removed, please see current application form.



Accredited EQA Scheme
Reference No:028/0060

HEATHCONTROL – Drugs in Oral Fluid (DOF)

The Drugs in Oral Fluid (DOF) scheme is designed to provide an independent performance assessment of laboratories and clinics that provide analytical services for drugs in oral fluid. The DOF scheme is fully accredited in the U.K. by Clinical Pathology Accreditation (CPA).

Drug abuse is a global problem affecting many in society. Advances in technology have enabled oral fluid testing for the presence of many drugs, such as the amfetamines and stimulants, benzodiazepines, cannabinoids, cocaine and metabolites, opiates and non-opiate narcotics.

Oral fluid as a testing matrix is increasingly being utilised in a range of applications, such as work place monitoring, clinical toxicology and criminal justice.

The advantages of oral fluid over traditional fluids such as blood and urine, are that collection is almost non-invasive, is relatively easy to perform, and, in forensic situations, can be achieved under close supervision to prevent adulteration or substitution of the samples.

There are now sensitive and reliable analytical methods available for oral fluid specimen collection, point-of-collection testing devices (POCT), screening and confirmation methods.



Due to the importance of results obtained it is essential that laboratories undertaking the analyses are able to demonstrate the testing they perform is dependable, reproducible and accurate. Participation in the DOF scheme will provide valuable feedback to laboratories/ on-site screening clinics who undertake these analyses, and a record of results overtime.

The full range and availability of test materials in DOF is determined on an annual basis and further details can be found in the DOF application form and scheme information document.

Test material	Analytes
Oral fluid test materials obtained from volunteers and known drug users. These regularly contain mixtures of drugs and their metabolites from six major classes	Amfetamines & stimulants, Benzodiazepines, Cannabinoids, Cocaine & metabolites, Non-opiate narcotics, Opiates.

Note: Test materials and analytes may be added or removed, please see current application form.



Accredited EQA Scheme
Reference No:028/0315

QUARTZ – Forensic blood toxicology scheme

QUARTZ is a blood toxicology scheme designed for laboratories undertaking analysis of drugs in post-mortem and other blood samples for toxicological purposes, particularly in a forensic context. Test materials are prepared using pre-screened human blood. Target analytes are added at an appropriate level and the test material mixed to ensure homogeneity prior to despatch.

The analytes to be determined in each round are from a list of non-prescription, prescription and controlled drugs, as well as other toxins, compiled by the Advisory Group, which reflects what participants are likely to encounter in forensic casework.

The test materials are subdivided into two groups:

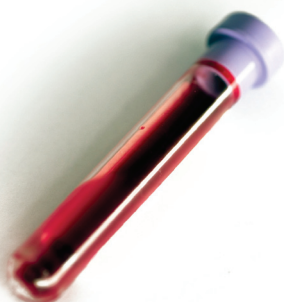
Group A: those drugs that are more frequently determined by participants.

Group B: those drugs that may be less frequently determined by participants.

Up to three test materials are provided in each round containing between 0 and 4 drugs.

Alcohol is major cause of road casualties and deaths and as penalties for drink-driving are severe it is essential the accuracy of analysis can be proven in the legal case. The test material comprises 10ml vial of whole blood containing alcohol for analysis.

The full range and availability of test materials in QUARTZ is determined on an annual basis and further details can be found in the QUARTZ application form and scheme description.



Test material	Analytes
Group A More frequently determined drugs	6MAM (MACM), Amphetamine, Amisulpride, Amitriptyline, Benzoyllecgonine, Buprenorphine, Carbamazepine, Chlordiazepoxide, Chlorpromazine, Citalopram, Clomipramine, Clozapine, Cocaine, Codeine, Cyclizine, Desmethyldiazepam, Diazepam, Diclofenac, Dihydrocodeine, Diphenhydramine, Dosulepin, Fentanyl, Fluoxetine, Ibuprofen, Imipramine, Ketamine, Lamotrigine, MDA, MDMA, Methadone, Methamphetamine, Midazolam, Mirtazepine, Morphine, Olanzapine, Oxazepam, Oxycodone, Paracetamol, Paroxetine, Pethidine, Phenytoin, Procyclidine, Promethazine, Propoxyphene, Quetiapine, Risperidone, Salicylate, Sertraline, Temazepam, THC, THC-COOH, Tramadol, Venlafaxine, Zolpidem, Zopiclone.
Group B Less frequently determined drugs	Amlodipine, Amobarbital, Atenolol, Benzyl piperazine (BZP), Butobarbital, Clobazam, Clomethiazole, Clonazepam, Dextromoramide, Dipipanone, Gabapentin, Loprazolam, Lormetazepam, Mefenamic Acid, Methylphenidate, Naltrexone, Pentobarbital, Phenelzine, Propranolol, Secobarbital, Sildenafil, Thioridazine, Trazadone, Zaleplon.

Note: Metabolites of the above substances may also be added.

Test material	Analytes
Drug Identification	Participants will be asked to identify the drug(s) only. The test material will always (if positive) contain one drug from Group A. Up to three other drugs may be in the test material from either Group A and/or Group B.
Drug Quantification	Participants will be told the identity, or generic classification, of the drug(s), and asked to quantify the concentration. They will also be asked to give an interpretation of the results in respect to a case study provided. The test material will always contain a drug from Group A. Any other drugs present will be from Group A and/or Group B.
Drug Quantification	Standard solutions containing drugs for the evaluation of instrumentation.
Alcohol Quantification	Participants will be required to quantify the alcohol concentration by their usual methods.

Note: Test materials and analytes may be added or removed, please see current application form.

FORENSICS PT trial scheme

LGC Standards Proficiency Testing has developed a range of trials for the Forensic Science sector. These are intended to complement the quality control and quality assurance products already well established in these specialised laboratories, in order to help demonstrate the efficacy of these measures.

The trials may comprise:

- Qualitative tests; confirmatory testing and/or identification.
- Quantitative tests; analysis of specified component(s).
- Post-analytical challenges/scientific conclusion; interpretation based on a case study and analytical data.

Participants may use any method they deem appropriate to perform the test or analyse the data. If the method used influences the result, it will be possible to identify this through analysis of the data submitted, and give feedback in the report.

The full range and availability of test materials in FORENSICS PT is determined on an annual basis and further details can be found in the FORENSICS PT application form and scheme description.



Test material	Analytes
Alcohol Technical Defence*	Participants will be asked to use the available information to establish the likely level of intoxication of a suspect at a given time. Data provided will include analytical results and an alleged case scenario or witness statement.
DNA*	Participants will be asked to use the available information to establish the suitability of a mixture of DNA profiles for designation. Data available may include print outs of electrophoretograms from GMID, an excel table of peak data exported from GMID, and .fsa files generated by AB Data Collection software.
Drugs*	Participants will be asked to use the available information to establish the identity of an unknown powder submitted for drugs profiling. Data provided will include a brief summary of the investigative approach, chromatograms or similar of the suspect powder from appropriate analytical technique (e.g. GC-MS). Results for reference materials/ calibrants analysed simultaneously.
Questioned Documents*	Participants will receive a piece of paper with a series of ink marks, and up to three suspect writing implements or comparison documents. The hypothesis to be tested will be described in detail.

Note: Test materials and analytes may be added or removed, please see current application form.

*Please note these trials are currently not included in our scope of accreditation.

Confidentiality

In order to ensure confidentiality, participants in all schemes are allocated a unique laboratory reference number. This number enables results to be reported without divulging the identities of participant laboratories.

However it should be noted that, where required, the performance of U.K. participants is reported to the National Quality Assurance Advisory Panels for Chemical Pathology and for Medical Microbiology as appropriate.

Reports

If PT/EQA schemes are to be effective in facilitating improvements in the testing undertaken by participating laboratories, analyses of the results need to be returned to participants quickly. The HEATHCONTROL reports are issued promptly within two - four weeks of the reporting deadline and are received as paper copies. The content of the reports vary from scheme to scheme but includes details of the composition of the test materials, the assigned value, the spiked value, performance scores (BIS score) for each laboratory, and tabular and/or graphical representation of participant results.

The QUARTZ scheme and FORENSIC PT Trial results are returned through our electronic reporting software, PORTAL. Full instructions for the use of the PORTAL system are provided on registration; features include result reporting by multiple analysts and using multiple methods. Following evaluation of the results, the QUARTZ and Forensics PT Trial reports are available on the website, or sent by email within 10 - 15 working days, respectively of round closure. Participants will be emailed a link to the report when it is available.

Other PT services

- Advice and consultancy for potential PT providers.
- Consultancy for PT providers in the implementation of appropriate quality systems.
- Training courses for PT participants and their customers.
- Prominent role in the development of policy and guidance for proficiency testing by representing the UK on a number of key international committees.

Product development

LGC Standards Proficiency Testing is continually striving to improve current products and to introduce new test materials and PT schemes where appropriate. New products may be introduced initially on a trial basis and offered to participants. It will be made clear to participants when they are participating in a trial.

If you have a requirement for a new analyte, test material matrix, or a whole new scheme please contact: customerservices@lgcpt.com

Reference materials

Before a correct interpretation can be applied to a diagnostic measurement, clinicians must have confidence that target analytes have been correctly identified and quantified. For many analytical methods, this can only be achieved through the use of appropriately certified and characterised reference materials

As a leading global supplier of reference materials, LGC Standards offers a broad range of measurement standards for routine clinical applications, such as therapeutic drug monitoring, occupational health, drugs and drugs of abuse, molecular biology and veterinary medicine.

We offer a range of certified reference materials (CRM) to assist, for example, manufacturers complying with the European *in vitro* diagnostics Directive 98/79/EC. These higher order reference materials are produced by metrological institutes and organisations and are precisely characterised.

For further information or to receive our catalogue, please contact your local office or visit our website: www.lgcstandards.com

Summary

Proficiency testing (or EQA) is widely used across many scientific disciplines as an integral part of the quality control and risk reduction process. Participation in these schemes provides the analytical laboratory with the ability to assess performance on an ongoing basis and benchmark that performance against other laboratories while maintaining anonymity.

The ongoing assessment of performance using proficiency testing allows the identification of areas for training and improvement and may also assist with audit processes.

LGC Standards clinical and forensic toxicology reference materials

LGC Standards has been serving the clinical and forensic toxicology sector for many years, providing a wide range of reference materials in different presentations. Our product range, covering solid materials to solutions, from pure substances to complex multi-component matrix controls, has been assembled to allow laboratories a single source of materials to fulfil their needs.

The collection of materials assembled from manufacturers and suppliers all over the world include:

- Parent drugs
- Phase 1 metabolites
- Glucuronide and sulphate conjugates
- Pure substances
- Matrix materials
- Isotopically labelled internal standards

LGC Standards appreciates that laboratories require reference materials for a wide range of substances and has ensured that the available materials cover all the major drug groups including:

- Anti-epileptics
- Antibiotics
- Immunosuppressants
- Anti-psychotics
- Cardiac drugs
- Drugs of abuse
- Anti-cancer drugs
- Vitamins
- Steroids (endogenous)
- Anabolic agents

Our range of materials is constantly expanding. If you are unable to find what you want from our catalogues, please contact your local office who will be able to help you further.



LGC Standards

LGC Standards Proficiency Testing has dedicated local offices worldwide to help with your needs from placing an order through to specific enquiries. Please see the list below to contact your nearest office.

Brazil

Tel: +55 12 3302 5880
Email: bz@lgcstandards.com

Territories served: Brazil.

Bulgaria

Tel: +359 (0)2 971 49555
Email: bg@lgcstandards.com

Territories served: Bulgaria, Macedonia.

China

Tel: +86 10 8532 4820
Email: infochina@lgcstandards.com

Territories served: China, Hong Kong, Macau, Taiwan.

Czech Republic

Tel: +420 543 529 205
Email: cz@lgcstandards.com

Territories served: Czech Republic, Slovak Republic.

Finland

Tel: +358 (0)2 233 9355
Email: fi@lgcstandards.com

Territories served: Finland.

France

Tel: +33 (0)3 88 04 68 91
Email: fr@lgcstandards.com

Territories served: Algeria, Belgium, Benin, Burkina, Burundi, Cameroon, France, Gabun, Ivory coast, Jordan, Lebanon, Libya, Liechtenstein, Luxembourg, Madagascar, Mali, Mauritania, Mauritius, Monaco, Morocco, Rwanda, Senegal, Syria, Tanzania, Tunisia.

Germany

Tel: +49 (0)281 9887 0
Email: de@lgcstandards.com

Territories served: Albania, Austria, Bosnia-Herzegovina, Cyprus, Germany, Greece, Iran, Israel, Japan, Korea, Kosovo, Mongolia, Montenegro, Singapore, Switzerland, Vietnam.

Hungary

Tel: +36 (06) 26 314 891
Email: hu@lgcstandards.com

Territories served: Croatia, Hungary, Slovenia.

India

Tel: +91 (0)80 6701 2000
Email: in@lgcpromochem.com

Territories served: India.

Italy

Tel: +39 02 24126 842
Email: it@lgcstandards.com

Territories served: Italy.

Netherlands

Tel: +31 (0)643 775 422
Email: nl@lgcstandards.com

Territories served: Netherlands.

Poland

Tel: +48 (0)22 751 31 40
Email: pl@lgcstandards.com

Territories served: Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyz Republic, Lithuania, Poland, Tajikistan, Turkmenistan, Ukraine, Uzbekistan.

Romania

Tel: +40 364 116 890
Email: ro@lgcstandards.com

Territories served: Moldova, Romania, Serbia.

Russia

Tel: +7 (812)935 1180
Email: ru@lgcstandards.com

Territories served: Russia.

Spain

Tel: +34 (0)93 308 4181
Email: es@lgcstandards.com

Territories served: Andorra, Argentina, Bolivia, Belize, Chile, Columbia, Costa Rica, Ecuador, El Salvador, French Guiana, Guyana, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Portugal, Spain, Suriname, Uruguay, Venezuela.

Sweden

Tel: +46 (0)33 20 90 60
Email: se@lgcstandards.com

Territories served: Denmark, Estonia, Greenland, Iceland, Latvia, Norway, Sweden.

Turkey

Tel: +90 216 360 0870
Email: tur@lgcstandards.com

Territories served: Turkey.

United Kingdom

Tel: +44 (0) 161 762 2500
Email: customerservices@lgcpt.com

Territories served: Australia, Bangladesh, Bermuda, Botswana, Brunei, Canada, Channel Islands, Ethiopia, Ghana, Indonesia, Ireland, Kenya, Kuwait, Malaysia, Malta, Nepal, New Zealand, Nigeria, Oman, Pakistan, Philippines, Qatar, Saudi Arabia, South Africa, Sudan, Tobago, Trinidad, United Arab Emirates, United Kingdom, USA, Yemen, Zambia, Zimbabwe.