



Careers in Pharmaceutical Statistics

Do you want a career that is exciting, varied, always advancing and makes a real difference to the lives of people all over the world?

How about using your mathematics knowledge to help develop and trial life-saving medicines?

www.psiweb.org/careers



The basics

Pharmaceutical statisticians and statistical programmers are employed by a variety of companies of all sizes, including giant pharmaceutical companies, contract research organisations, small specialist companies, hospitals and universities.

- Highly competitive pay and a great range of additional benefits such as flexible hours and working from home.
- A constantly changing industry with plenty of opportunities to learn something new
- Good career progression with many different roles and career routes
- Some jobs and companies give opportunities for international travel.

Statisticians work with a large team of people across a variety of functions. What is important is that a statistician can communicate statistics clearly to people with a wide variety of experience.

Did you know?

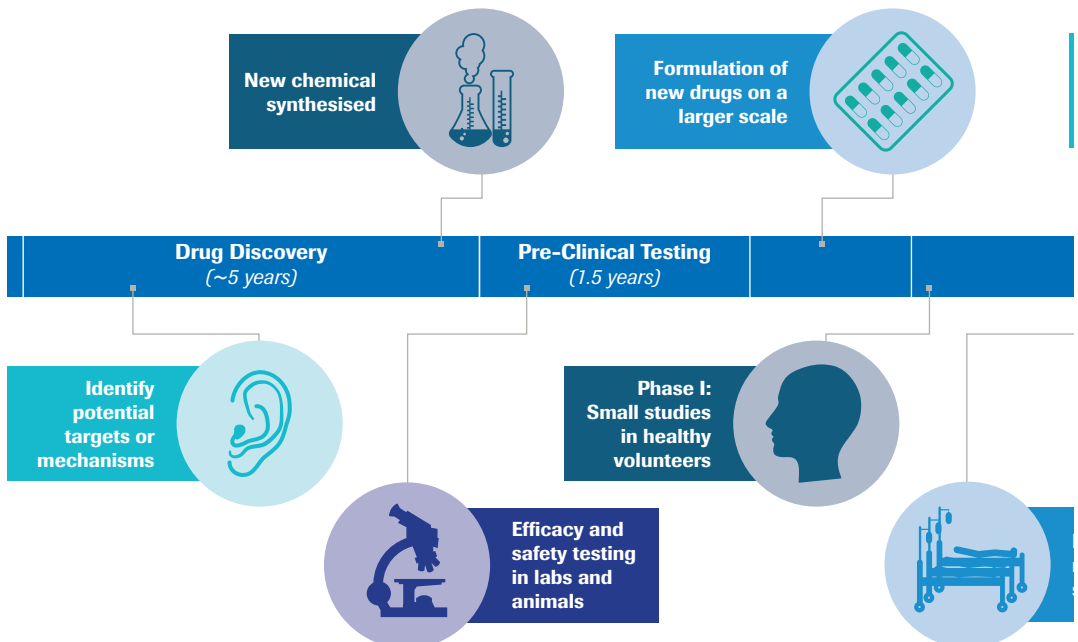
At £5 billion per annum, the pharmaceutical sector generates the largest trade surplus than any other industrial sector in the UK.

HM Revenue and Customs,
UK Trade Info 2012, February 2013

The work is more varied than you might expect. We attend meetings and conferences and there are a lot of opportunities to participate in training and develop personal or technical skills. Sometimes we might have to travel to present results or train others in statistics.

The best aspect of this job is that you will make a real difference to patients. The work is very rewarding and you get to be at the forefront of finding cures for today's most serious illnesses.

The pharmaceutical drug development timeline...



A statistician's typical day

A pharmaceutical statistician can work on almost all areas of drug development; from pre-clinical to post launch marketing studies, so tasks on a typical day will vary from role to role. Some of the activities statisticians typically get involved in are highlighted below:

- **Planning** – Designing the study, performing sample size calculations and simulations, writing statistical analysis plans, contributing to the study protocol and validating the study database.
- **Analysis** – Performing exploratory analyses, helping to program tables or graphs, attending project meetings and analysing, interpreting and reporting study results.

Did you know?

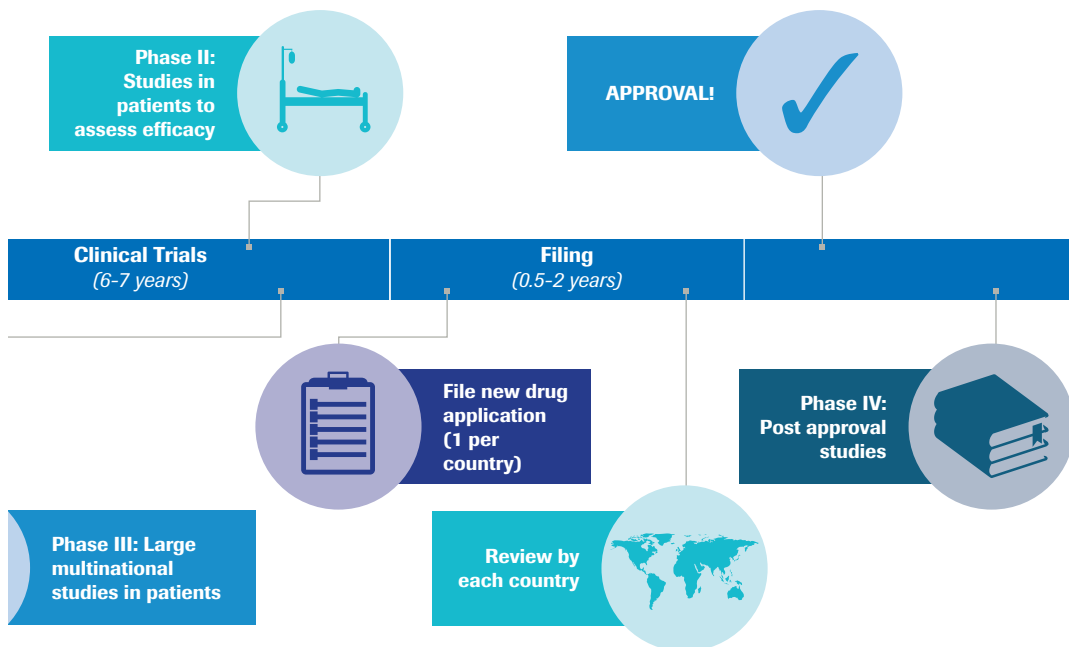
The UK's pharmaceutical sector invests approximately £13.3 million in R&D every day.

ONS, Business Enterprise Research and Development 2010, November 2012

Industry challenges...

There are internal and external pressures for companies to produce drugs more quickly and reduce costs. Getting a drug to market more quickly can optimise revenue, as well as benefiting patients as early as possible. Regulatory authorities are also becoming even stricter – new medicines should be low cost, effective, safe and offer something nothing else on the market does. To address this, recent developments in statistical methods include:

- **Modelling and simulation**, either to link information from pre-clinical to clinical trials, to estimate dose response, or assess operational characteristics for sample size calculations.
- **Bayesian statistics** which allow prior information from previous trials to be used.
- **Systematic review** (meta-analysis and data – mining) of any prior research for the disease area or drug class.
- An increased use of real world data to help aid data sharing and transparency.
- Efficient and adaptive **trial designs** which allow ineffective drugs to be stopped earlier or very effective drugs trials to close earlier than planned, speeding up the approval process.



About you!

You will need:

- **A good BSc degree** with a high mathematical content.
- **An MSc degree** – preferably in medical statistics (for statisticians only).
 - MSc funding is sometimes available.
 - A list of courses is available on the PSI website.

There are several skills that companies look for in their statisticians or programmers:

- Computing; **SAS and R**, although most companies will train employees if they need it.
- **Communication and presentation skills**; pharmaceuticals is a global industry so these skills are vital.
- An **eye for detail**, well organised and a logical thinker.
- Must be confident – **speak up and influence**.
- Can work well in a team and independently.

As it is rarely as simple as ‘Does the drug work? Yes/No’, we use Statistics to help inform and understand...

- Who and what diseases are we aiming to treat?
- Does the drug hit the target (e.g. tumour/receptor)?
- We can't progress every drug that shows promise – so which ones?
 - Will the drug work and be safe in a wider population?
- How can we differentiate from other medicines which are already available?

Placements

Many companies within the industry offer placements to students in their third year at university. This is an invaluable way to gain first-hand experience, so find out from universities if they offer a course with a year in industry.

To find out more about this industry, or for relevant MSc courses and sponsorship opportunities please visit the PSI website <http://www.psiweb.org> and click on the Careers section. You can also find us on Twitter @PSIUpdate and LinkedIn.

Did you know?

On average it takes 10-15 years from discovering a new drug/compound to getting it approved for patient use.

2013 Biopharmaceutical Research Industry Profile

@PSIUpdate



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