

Pathogen Genomics Plan for Wales 2026 to 2029

How we will use genomics to improve health

Pathogen genomics means doing
a study on germs to learn how they
work and how to stop them.



How to use this document



This is an Easy Read version of: **The Pathogen Genomics Delivery Plan for Wales (2026-2029).**



You might need help to read it. You can ask someone you know to help you.



Where the document says **we**, this means **Public Health Wales**. For more information contact:

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Important words



These are some important words used in this booklet. They may be hard to understand. We have explained what it means in this section.



Disease is when you are ill because of germs or other causes.



Diagnosis means checking someone's health and doing tests to see if they have a health condition.



Infection is when germs get into your body, grow and make you ill.



Laboratory is a place where scientists test samples, like blood or germs.



Pandemic is when a disease spreads across many countries or the whole world.

What is Pathogen Genomics



Pathogens are germs that can make you ill.



Genomics means looking inside living things to understand how they work.



Pathogen genomics means doing a study on germs to learn how they work and how to stop them.



Pathogen genomics services help doctors:

- Understand diseases in patients and communities.
- Make better choices about medicine and care.

About this plan



We are **Public Health Wales**.



We are part of **Genomics Partnership Wales**. This partnership brings organisations together. We develop and deliver genomics services across Wales.



In 2016, NHS Wales started using pathogen genomics. Since then, Wales has got better at using it.



One of our teams is the **Pathogen Genomics Unit**. This team does study on germs, like bacteria and viruses, to learn how they work.



This plan explains what we will do with pathogen genomics from 2026 to 2029.

The plan aims to help Wales:



- Use pathogen genomics more in everyday healthcare.



- Be better prepared for the future.

How pathogen genomics can help



Pathogen genomics helps keep people safe from **diseases** that spread between people.



Some diseases are getting harder to treat. This is because some medicines stop working against some germs.



Genomics helps doctors:

- Understand these problems.
- Choose the right medicine and care.
- Help prevent **diseases** from spreading.



Stop illness early

Genomics can:



- Help make vaccines.



- Help stop **diseases** spreading.



- Help with germs when some medicines do not work well



- Help reduce **infections** in hospitals.

Fair health



Some people get ill more often because of:



- Where they live.



- How much money they have.



- Food and diet.

Genomics can:



- Help understand how **diseases** spread.



- Help stop illness before it starts or spreads.



- Help doctors test and treat people better.

Staying safe

Genomics helps:



- To find dangerous germs early.



- Experts to respond quickly to risks.

What we do



We provide pathogen genomics services across Wales. Services have grown from a small team into a large service.



Wales uses **laboratories** to test samples from patients. So we can respond quickly when **diseases** spread. This means:

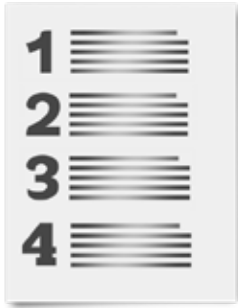


- **Diseases** can be controlled faster.



- Wales can share information with the UK and other countries.

Our ways of working



We have 4 main ideas that guide our work.

1. Be clear and honest.

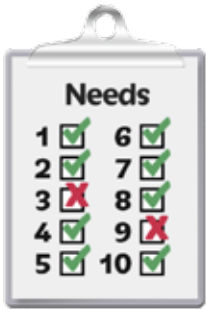


- We explain our work in a clear way.



- We listen to patients and the public. And keep them at the centre of everything we do.

2. Work in a safe and responsible way.



- We try not to cause harm. And only do work that people need.



- We use trusted research and good information to make decisions.

3. Be bold in what we do.



- We want Wales to lead in pathogen genomics to improve health.



- We use genomics to help make faster and better decisions in healthcare.

4. Work with other organisations and people.



- We work with other organisations through Genomics Partnership Wales. And across Wales and the UK.



- We connect research and healthcare.

What we will do



Our plan has 3 main themes:

1. Care and treatment for patients
2. Research and new ideas
3. Systems and support

1. Care and treatment for patients



We will have 11 goals under this theme.



Goal 1: Make ways to guide and check pathogen genomics work

Actions



1. Develop new ways of working inside Public Health Wales. This will help with:
 - Checking progress over time.
 - Organising work and staff.
 - Decision making and rules.



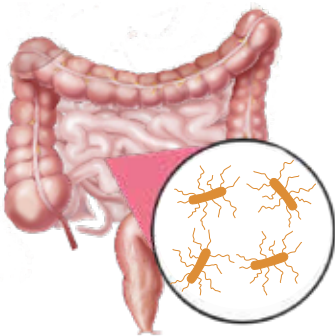
2. Create a clear explanation of how the programme works. This will improve joint working with partners across Wales.

Goal 2: Improve current pathogen genomics services

Actions



1. Improve services for **infections**. This will involve working together with other organisations across Wales and the UK.



2. Improve the C. difficile genomics service. C. difficile is a superbug. that causes gut **infections**. This happens mostly in our hospitals. New tools will support local healthcare teams and help stop it spreading.



3. Make and use computer systems for managing information. They help find linked cases of **infection**.



4. Improve systems and ways of working to make services work better.

Goal 3: Prepare for future problems



Pathogen genomics helps Wales respond when a **disease** spreads quickly. And to **diseases** that spread between countries.



What we learned from COVID-19 will help us plan better.

Actions



1. Improve planning for future **pandemics**. This includes following ideas from the COVID-19 Inquiry.



2. Develop new technologies to study germs. They support faster responses to problems.



3. Build stronger links with universities and companies. These links will help us be more ready for emergencies.



4. Improve how information about germs is made and used.



5. Support work across the UK. Work with UK Government programmes on protecting against harmful germs.

Goal 4: Have new pathogen genomics services

Actions



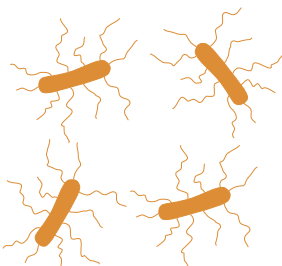
1. Improve parasite testing by using genomics. Parasites are a group of diseases. They are small living things that can make you ill. Genomics can help understand them.



This work will take place in **laboratories** in Swansea.



2. Look into having a fungal genomics service Fungi like moulds and yeasts cause fungal infections that make people ill.



Use genomics for germs that live without air. They are called anaerobes like *C. difficile*. Wales has experts who study these germs.



3. Improve understanding of very bad **infections**. This includes **infections** where medicines stop working.



4. Review current genomics services used by Wales to look at:

- Cost of services bought. For example from England.
- How well a service works.



The aim is to see if it would be better for some services to be back in Wales.

Goal 5: Use pathogen genomics in new ways

Actions



1. Find current services that do not use genomics but need to change.



Work with partners to review services that study and test germs that cause **disease**. These include:

- NHS organisations.
- Universities and researchers.
- Companies and charities.



2. Look into genomics for sexually transmitted **infections**, also called STIs.



These are **infections** that can pass from one person to another through sexual contact.



Genomics can help:

- Find out which **infection** a person has.
- Stop **disease** before it starts or spreads.



3. Find gaps in testing in healthcare settings. This will support the use of genomics in hospitals across Wales.

Goal 6: Track diseases better



Pathogen genomics helps track **diseases** over time across large numbers of people.



It helps give early warning of when a **disease** spreads quickly in an area or group of people.

Actions



1. Expand the use of genomic information in tracking **disease**.

We will do this using our Genomic Epidemiology Unit. It was set up to support genomics and public health work.



2. Develop new ways to get genomic information.

Work with healthcare and research organisations to do this.

Goal 7: Track how diseases move between people, animals, and the environment



Some **diseases** spread between animals and humans.



Genomics helps track how **diseases** move between people, animals, and the environment. Knowing where this happens means we can stop them faster.

Actions



1. Work with environmental health organisations in Wales. The aim is to:
 - Find good ways to use genomics.
 - Develop services for routine environmental health work.



2. Build partnerships across the UK. These include organisations working in human, animal and plant health.



3. Share information with universities and companies. This helps find new information from results.

Goal 8: Work across the UK



Working across the UK improves genomics services. It:

- Saves time and resources.
- Helps share tools, methods, and information. Making services better.

Actions



1. Support joint working across UK pathogen genomics services. Through groups like UK Health Protection Oversight Group.



2. Make ways to share knowledge and skills. Between public health staff in Wales, England, Scotland and Northern Ireland.



3. Share information and tools. For example:

- Pathogen genomic results.
- Computer tools.
- **Laboratory** ways of working.

Goal 9: Support best ways of working across the world



Some rules for pathogen genomics are still being worked on.



Countries are working together to agree best methods.

Actions



1. Work with organisations across the world. To help develop global standards for pathogen genomics.



2. Share genomic information. Where we can share it in a safe and legal way with organisations across the world.

Goal 10: Work with companies



Companies provide important products for genomics services.



Working with them improves services and new ideas. It can support jobs and businesses in Wales.

Actions



1. Develop partnerships with companies. This will help develop services and improve how services are delivered.

Goal 11: Have new services working across Genomics Partnership Wales



Genomics will play a bigger role in healthcare in future.



Health systems need to work together to use new genomic information.

Actions



1. Explore how pathogen genomics can support the SWAN clinic. This is a clinic in Cardiff for people who might have rare health problems.



2. Look at how pathogen genomics may support care for long term health conditions.



3. Include pathogen genomics in services to help choose the best medicine for the person.



4. Study humans and germs together. This could improve **diagnosis**, medicine choice and care.



5. Look into new technology. Review new **laboratory** equipment and technology.

2. Research and new ideas



Research means finding new information through study.



This work has already started. We need to do more work to improve genomics services.

Actions



1. Use ideas from the Genomics Research Review. This review assessed current work and suggested ways to make it better.



2. Do more pathogen genomics research. This will improve what we know and find out more about **diseases**.

3. Systems and support



Digital systems are very important for genomics. These include the different types of computer systems we use.

Actions



1. Make safe systems to share public health information across the UK.



2. Support Genomics Partnership Wales in making a digital strategy. This is a plan for using technology together across Wales.



3. Make systems to share research information.

Skills and money for services to work well



This plan will need people, skills, and money to work well.



Work will take place across Public Health Wales, the NHS, universities, and companies.



As services grow, they will need more staff and new training for healthcare workers.



We will plan money carefully and check if extra money is needed.



Genomics should be included early in healthcare plans. This will help improve care and save money later.

Checking our work



We will check how well the plan is working. We will write reports to share updates.

Reports will include:



- Reports and plans within Public Health Wales.



- Updates to Genomics Partnership Wales boards to support decision making.



Llywodraeth Cymru
Welsh Government

- 1 report every year to the Welsh Government.