

PHW Digital and Data Strategy



Introduction

To deliver the Public Health Wales long-term strategy we will need to make full use of the power of digital and data. Digital and data are changing rapidly, in the tools we use, the methods available, the way people interact with health and wellbeing service or find and use information, and these underpin every aspect of our strategy. So, we have written this digital and data strategy to share our vision and approach in these areas.

Public Health Wales is a part of the NHS in Wales, and our responsibility goes across the whole country and all the people in it. Our guiding star for what we do as an organisation is to work together to help all the people in Wales live healthier lives [\[link to vision in strategy\]](#). This should be the same for all the things we do, whether it's in person or online, in a clinic or on a smartphone, and so our guiding star in this digital and data strategy is:

We use data and technology to protect and improve the health and well-being of people in Wales and to reduce health inequalities.

Because this strategy is for the whole of Public Health Wales, we have built it by listening to the needs of people who work all across the organisation. Because the strategy will affect people across Wales, we also tried to listen to the needs of people in Wales, as well as the wider NHS, central and local government, academia and other sectors. That should mean that we are working to meet the needs of all those people and groups. Every year, we'll test whether what we're doing is really meeting those needs and ask if we can do it better. If there's anything you think we can change to improve this strategy, please let us know.

Summary

This strategy tries to balance the needs of a lot of groups. To give a fair weight to each area, we have chosen three broad areas to frame our work. Within these three areas we will keep coming back to the five priorities that the most people said were important.

Our three areas are:



Build on strong foundations

We will strengthen each of the core areas that will be the foundation for digital and data transformation in Public Health Wales.

- Empowered people – we will listen to people who use each service before we start new work, and all the way through the work, so our services meet their needs.
- Empowered professionals – we will work with other NHS organisations to bring the professional framework for digital and data closer to other sectors. We'll bring together communities of practice and actively develop more ways to share knowledge and improve.
- Safe data – combining cyber security and modern data processes to be responsible guardians for sensitive personal data.
- Visible landscape – our systems and our data should have clear maps and catalogues, so that anyone who needs to can find out the owner of a system or the location of the information they need.
- Good quality – Our data and our systems should have a good enough quality that they can be used without workarounds or manual checking. We will try to find ways to make the data we use better for all the people who need to use it. We will make sure people can understand what data is available and what it says.



Build in alignment

This strategy does not exist in a vacuum. There is a wider Public Health Wales Long Term Strategy [\[Link\]](#), and connected to that are the [Wellbeing of Future Generations](#) and the [UN Sustainable development goals](#) that aim to help meet the needs of the people in Wales and around the world. That means we need to have

- Shared standards – by using national or international standards for our data and digital products and services people can easily link with us and understand us. These standards could include:
 - [the Code of Practice for Statistics](#) – so that our official statistics and reports are easy to understand, trustworthy and high quality
 - [Wales digital service design standard](#) – so that we can test whether our services are inclusive, meet the needs of people in Wales and connect to other services.
 - [Data sharing code of practice](#) – so that we can keep people's information safe and also share the right data to deliver good advice and services.
- Shared components – it takes a long time to build something from start to finish. But there are lots of things we do that share processes. By finding what is the same in many services and products, we can spend more time working on one really good solution and use it for more than one solution.
- Align with other programmes – there are components being made across the NHS in Wales like the [NHS Wales App](#). If those components meet a need then we should use them.

- Intelligent customer – we need to use new Laboratory Information Systems, e-Prescribing systems, the National Data Resource and more. In each case, they will meet some of the needs of Public Health Wales so we need to be a responsible, intelligent partner during the programmes.
- To build products that maximise our delivery and achievement of the Public Health Wales Long-term strategy



Build to make a difference

We can make a measurable difference to health and wellbeing through powerful, actionable data and analysis, and innovative, efficient digital tools and systems.

Create together – We need to make what people need.

Be where people are – We will work and publish in places where people who need us can find us

Agile mindset, pragmatic design – We will continue our use of rapid cycles of development and delivering things that are “good enough” so that they can be used in a timely manner.

Embrace new things – We will make the most of the data we look after to benefit the public in their health and wellbeing. We need to consider new sources of information such as wearable technology, activity monitoring, analysis of health and healthy activities and better ways to share information and advice with the people of Wales. We can also make better use of new digital and technology services, like Cloud hosting for our analytics and processing, better remote accessibility

Use AI carefully – AI technology is a long way off being able to replace humans. It still, legally, ethically, and technically, requires human oversight. Even so, it has an important role to play in health and care, alongside human skills and expertise. Using the right sort of AI carefully and well can free up time for specialists to spend in direct interactions with people.

Measure influence – We will track our impact, examining how our data is being used by us and others to make a difference to people health and wellbeing

We will evaluate our digital and data innovations to understand if what we do is making a difference to the health and wellbeing of people in Wales, and where it is not to learn, adapt and improve.



Our principles

Inside all three areas, we will keep coming back to the principles that mean the most to our teams. These principles were developed by people from across Public Health Wales

People first – our services start and end with people, because improving public health and wellbeing is at the heart of what we do. We appreciate and value the public. We also appreciate and value the people who build and run our services, because to deliver great services we need great teams.

Accessible, fair, and equal – everyone who needs our services should be able to find and use them. We want to design and build our services so that nothing about a person's needs is a barrier to them using our services.

Open by default, secure by design – in sharing what we can openly and transparently, we increase the value of our services and earn the trust of others.

Efficient: we re-use what we can, we remove copies and make reusable components so we have fewer things to look after. We make the best use of what we have. We can use different methods like Agile and Lean to test and try ideas in faster, cheaper ways.

Focussed on the future – we turn data into insights that we can use to make decisions. We make systems and services that people can use in ways that work best for them.

Where are we starting from?

A lot has changed in public health work in Wales over the last few years. Digital and Data advances including new approaches to Artificial Intelligence, automation of simple and complex tasks, the uptake of mobile devices and remote working and diagnostics are just a few areas that have been affected significantly. COVID has accelerated much of this and has fundamentally changed the way many of us work and live.

A lot of people in Wales had to learn to do business online or over the telephone. Studies across the world have shown that digital capability and uptake has accelerated in almost every sector. More people than ever from groups that were considered digitally excluded, like older people, are video chatting, using services such as banking and buying toys and sports equipment online.

In Public Health Wales we've worked at the front line throughout COVID just as we have during other outbreaks such as Monkeypox, Swine Flu and many more. But

what was different in COVID was the way technology played such a big part. In test and trace, in travelling, in vaccination, we built new apps and delivered new insights and information at breakneck speed. It wasn't the kind of pace we could keep up forever, but a lot of people in Wales now want to know whether we can deliver other reports and services the same way.

But meeting a national emergency meant that we had to step away from some of our other work, and so we have built up a real debt in our systems because they have been getting older. Every organisation needs to manage this legacy cost. We need to decide which systems are still good to run, which need to be patched or upgraded and which need to be replaced and decommissioned. The older a system is, the more it is likely to cost to fix, and we have to ensure that patient safety and confidentiality remain secure.

Over COVID, we have, rightly, been focussed on getting data out as fast as possible to meet a single unified national need. As we recover and learn from COVID, we need to reassess the statistics and analysis we produce, and make sure they are what our users need. We will need to serve it up in ways that work for different types of users, from analysts with deep technical knowledge, to senior leaders who need to quickly grasp the most important messages.

So we have been looking at what our landscape is now and what worked well during the last few years. To succeed. We will balance our efforts between managing current services and developing new products to meet public need. A good example of this is the Public Health Rapid Overview Dashboard. Here, we have used our learning about the rapid data that decision-makers find useful, and some new data science skills, to create a rapid overview of the health of the nation.

Discoveries

We have worked with internal and external partners to do some wide-ranging work in the beginning of 2023. We asked ourselves if our assumptions were the same as what people really needed in some of our service areas. What we've found is that the people in Public Health Wales really care about helping people in Wales be healthier and happier. But without a strong technical capability, lots of teams spend more time than they need to getting data manually, because that's the only way they feel confident doing it. By providing Public Health Wales with more access to digital and data professionals and by developing a professional framework we can help to

PUBLIC HEALTH RAPID OVERVIEW DASHBOARD

We took what we learned in COVID about how to bring together data from different places and put it in a living dashboard.

We learned that there are ways to show indicators of current harm alongside the wider determinants of health. The result is a single page of live information with clear commentary that people across the organisation can use to see what the biggest pressures on public health and wellbeing at the moment.

It can help us decide where to put more effort if we can see and compare the harm from communicable disease, cost of living, cancer and more.

make our processes more efficient. We need to have named owners for our digital and data products.

We've found that digital and data professionals want to have a much closer relationship with other specialists in Public Health Wales and vice versa. There's a desire to understand more about what digital and data teams can do to help. Lots of people we listened to said they felt that there were silos in Public Health Wales that they didn't feel empowered to break. That's why our strategy has a focus on empowered professionals.

In order to bridge the divide between where we want to be and where we are, we will use easy architecture documentation for both technical systems and data flows. This architectural understanding of our own systems and data underpins our ability to get and understand what data we have and make it cleaner and safer before we use it to do analyses. When we know what data we wish to capture and use then we know what services and systems we need to develop or change.

In our screening services and our registers, we have separate systems for each service. When we look closely, most of the tasks we have to do are the same. If we organise and build our systems differently then we could have a smaller set of systems that work for more than one service. That would save a lot of money and effort, and we could afford to spend more time on working with users to make those systems better.

Challenges

Interviews and workshops with our teams show that we want a shared understanding of the direction for digital and data for Public Health Wales and the reason for that direction. That's why we're making this strategy. We recognise that taking the time to think strategically is as much a part of the digital and data profession as delivering day-to-day tactical solutions.

We want to have a broader approach to cyber security and data security. As well as maintaining our existing specialists we are finding ways to increase working knowledge of cyber across all our teams, so that everyone in the organisation is another layer of protection. We don't want to have single points of failure in our systems either, so we are making sure that each activity has more than one person who can do it.

We want to collaborate more outside our organisation. We are in a good position to improve the way we share and link our existing data sets. As well as contributing to national data projects like [SAIL Databank](#) and preparing to be a node in the [National Data Resource](#) we could be much more effective in delivering change with a good data catalogue and reciprocal data sharing. Before the National Data Promise is delivered, there are still opportunities for us to share information to make a difference.

Where do we want to get to?

The way we use data and the way we use technology is always changing. So are people's needs, which means we need to keep checking and keep developing. However, it is good to have something to aim for, so in our workshops we identified a set of targets to aim for. Our current targets are:

Easy service

1. Our approach is clear and consistent, easy to understand and remember.
2. Our data and analysis are used to make meaningful decisions, and whoever needs them can find them, understand them, and use them easily.
3. As much of our data and data products as possible are openly available for use and easily understood in healthcare and health research and improvement.

Equal service

4. Our services can grow and shrink according to need, and everyone can serve themselves if they want, or work with whoever they need to get their service or product.
5. Our products and services are the same in English, in Welsh and in as much of a mix of the two as people need or want.
6. People get the same quality of service whether they are online, on the phone, on an app or in person, and they can use whatever mix suits their needs.

Safe service

7. Personal data is secure and it is shared safely and efficiently in order to provide excellent services and help improve health and wellbeing.
8. We have a good understanding of Artificial Intelligence (AI) and automation and we can use them safely to improve health and wellbeing and efficiency in Wales.

Supported people

9. Our teams are made of people with a broad mix of speciality. They have the tools, the skills and the knowledge to make and use digital and data products. We have an Agile mindset and feel comfortable testing ideas and failing as well as finding solutions.
10. We have automated basic data entry and other repetitive data tasks, so that our teams can concentrate on delivering services to more people and doing higher value tasks like interpreting and communicating insights

Building on stronger foundations



Empowered people

Our organisation is starting to move from focussing on what *we do* to what *people need*. So rather than just delivering information or services to people in Wales, we look at how to work with you to design and deliver what you need.

SKILL LEVELS

For each technical specialty there are skill levels:

- **Awareness** – a person with awareness has learnt about a skill but has not practiced with it.
- **Working Knowledge** – a person has some theoretical and some practical skill experience, but may need supervision or support to deliver safely and successfully
- **Practitioner** – a person has significant knowledge and experience and can undertake a range of specialist work.
- **Expert** – a person is a deep technical specialist in this area. They are probably acknowledged in their field and have extensive experience either working or researching in this area.

We have started to build a design and research team that focusses on people/users. By users, we mean the people who use and benefit from our products and services. As well as the existing *Time to talk: Public Health* panel we are going to start user panels that can provide a rolling group who represent a fair and equal mix of those who use our products and services.

We will make **user research** (observing and listening to people who use a product or service) the starting point for every project, and make sure that the people who lead and run our services are able to work closely with user researchers. By looking at the way a person experiences screening or vaccination or health advice, we can make their journey easier and hopefully have a better effect.

It's really important that data and digital professionals are involved in the conversation and co-creation that we do with service users, alongside service owners and communicators.

Empowered professionals

We should empower our teams to deliver things together, whether that's providing a service or solving a problem. That means giving them the right tools and skills to do their jobs and the trust and space to let them get on with it.

Our data and digital capabilities rely on us having people with a range of very technical specialities. Just like in medicine, where a junior surgeon and a senior renal nurse have different levels of experience and knowledge, we need the right mix of digital, data and technology (DDaT) professionals. We also need to make sure that Public Health Wales is a desirable place for specialists at different stages in their careers to come and work and develop.

In order to have more opportunities to align our specialists across sectors, we are working with other NHS Wales bodies to create a digital and data profession framework. In the meantime, the definitions [here](#) are a good marker.

Alongside the framework, there is a lot of work to do to help our new communities find their voice and develop their skills. We'll build communities of practice to share

knowledge and experience. We'll use blogs and regular sessions like lunch-and-learns to share what we're doing and get talks from external experts. We'll encourage contributions from people in other professions in Public Health Wales, and DDaT professionals from other organisations outside NHS Wales to learn new things, stay up to date and keep connected.

It's also important to accept that we won't be able to do everything ourselves. Sometimes we will need to work with partners across the NHS, in academia, the wider public sector or in the private sector, to make use of skills we don't have yet or to deliver a specific project that we don't have enough people for. When we do work with others, we'll welcome them as partners, trust them to work with us and respect their professional skills. And every time we work with partners, we'll share knowledge and skills, so we can learn and develop together.

Safe data and systems

You expect the NHS to protect your personal data while it is in our care. You also expect that we will keep correct information about you and that we share data within the NHS to provide excellent health care. Public Health Wales is committed to a continuing programme of cyber security for our networks, systems, data and infrastructure. Using benchmarks such as ISO 27001 and Cyber Essentials Plus, we will ensure that our partners are as committed to cyber security as we are. We will grow our cyber security capability and keep developing our risk management and information governance protocols so that we share where we need to and always protect sensitive data.

When using data for analysis and reporting, we will keep using safe researching and analysis standards as outlined in the statistics code of practice and national safe researching guidelines. Our reports and the underlying data sets we share during analysis should not allow individuals to be identified.

Visible landscape

We believe people work best when they can get on with their work and their tools and processes are helpful.

If we really want to have better services, we need a clear map of all the services we have. It needs to be easy to read and understand so that all of our teams and partners can use it. It needs to be easy to update so that we can maintain it even when we're busy.

We've recently completed an architecture review - a review of our systems and made a high-level map of everything. We should share our maps

ARCHITECTURE REVIEW

In the first three months of 2023 we did a project to map all of the digital systems in Public Health Wales. We used the [C4 model](#) – Context, Containers, Components and Code.

This is the first time we've created a complete system map. Now we have a picture of how everything fits together. Some of the systems we use are run by other organisations, like Digital Health and Care Wales, or NHS England. Some are systems we have bought or hired, and some we have built ourselves.

Now that we have this picture, we can make our systems more efficient. We can find and eliminate unintentional duplication and understand what order we need to upgrade or change things.

with other NHS Wales organisations so that they can see how our systems connect to theirs.

The next steps will be to make maps inside each of our systems at the container level, and then for the components in each of them. We'll also make maps for the data that goes through our systems so that we can find where to have the best impact on its quality. We'll keep using open methods for mapping like the [C4 approach](#) so that our maps can be read and used without difficulty.

Common tools and common language

Our discoveries showed us that we could improve by having common sets of tools that could be used for multiple systems, making it easier to share our skills across multiple areas. For instance, at the moment in Public Health Wales we use more than 10 different tools for statistical analysis and showing data. Although each tool has been brought in for the best reasons, it means that we can't easily share our analyses or our skills. It means we need to do the same things in lots of slightly different ways, and what we publish looks a bit different each time.

We should have consistent policies across the organisation. When we choose a data tool or a group of tools it needs to work for everyone, and we should all agree on the same place for the decision to get made. Having standard tools makes it easier for us to share resources in times of need – more people can help if there is a standard way of working that we can understand easily. The same goes for digital systems. Where several areas need a case management system, we can work together to try and find one case management system that we can implement and use for all of us.

We want to have as few tools as possible for each component of what we do. Lots of our services need to get information in from other places. So we could have a common set of tools to get information from other systems, check that it's in the right format and load it into our systems (often called Extract, Transform, Load, or ETL). We could have a common component for sending messages between systems, one for making simulations and so on.

We know that for the foreseeable future, some of our systems and components will be proprietary and some will be open source. We need to get those components to work in harmony and share smoothly between each other. That means having a good relationship between our partners and our developers so that we can integrate as flexibly as possible. Some components are going to be for all of Wales, like the appointment service or NHS Wales App. We'll need to make sure our own services can use them when they get released – we'll do that by working closely with the developers, knowing which of our components will connect and having the skills to plug them in.

Delivery and expectation

To make changes to our foundations is going to take time. If we are really going to consider the needs of all the users, including members of the public, members of PHW and other people who use our data or digital services, then when we make changes to a service we'll need to have commitment from all those groups to get

involved and contribute. If we plan to work on our case management system, everyone who uses it needs to put aside time to show what they need, and to test what is developed. If we want to develop our assessment of health impacts on the cost of living, analysts and researchers will need to show what they need and when they need it, data owners need to show where their information lives and how it can be accessed. Because of that, each item should have a service owner and a product owner.

OWNERS

Service owner/Product Manager

In our case, a service owner is someone who represents all of the people who use a product or service. These people are across the organisation and outside it, and the role of the service owner is to know who they are and work regularly with them and with user researchers to find out and share all of the needs that users have for a service or product.

Product owner

The product owner is a specialist who is responsible for the product or service running well and meeting the needs of users. For a digital system they might be a developer or service manager, and for a data product they might be a data scientist or analyst. They liaise with the business owner and with the development team to ensure the pipeline of development is clear and well prioritised. They make sure that users get the most value possible from the service or product.

We still need to be realistic about what we can and can't do on our own. We're a public health organisation, not a software company, and we're not meant to be building lots of new services by ourselves. That's why we need to get better at having modules that we can reuse, better at using other people's work if it meets our needs and better at sharing documents, knowledge and access to systems. We can improve our partnership working by developing relationships with those who support us. We'll use the same approach of mutual trust and respect for professional capabilities. We'll be clear about how people can work with us, and what standards we want to use.

Whether we're providing support and services to each other or working with other organisations, if we rely on someone else to deliver something then we should have a good Service Level Agreement. It lets all parties involved in delivery agree what should be delivered and when. That way we can have honest conversations about what we need and what we can provide. If something changes about the people or the time available, we know we're going to need to revisit the agreement or get some help.

Better use of data

We plan to improve the way our data is collected, stored and manipulated so that it can be found and used more easily. Our data should be available in open, standard formats, so that it can be easily shared with other things, like individual Electronic Health Records or GP systems. We should use the best practices and the best tools to collect, store, analyse and process our data. To ensure data is secured and protected throughout its lifecycle, we'll use techniques such as encryption, anonymisation, and access controls.

To move away from silos, we will bring our data into central repositories that can exist easily in the cloud or on our premises. Holding our data centrally will help us manage it more securely and access the data more easily. We can make it even better by developing our data catalogue, which shows what data we have available, in what formats, who owns it and where it is kept. We will also need to make sure we keep good data about the data (metadata), for example, defining the different variables, describing how it was collected, advice on the strengths and weaknesses of the data and so on.

From there we can improve the quality of our data by running automatic and manual tests. We can find out if there is data missing from an entry and compare it to other places in the organisation or the wider NHS to see if there are bits that are the same or different. We can reduce the burden on our live systems and databases if all of our data is together and accessed in the same way, so that they can run faster and have fewer mistakes.

Our analytical data should be managed according to the [FAIR principles](#) – findable, accessible, interoperable and repeatable. Instead of spending time manually extracting data to analyse, we'll set up "Reproducible analytical pipelines" that can be set up to extract the same data at a fixed time every day, week, month, etc. Using these we can improve public health outcomes by enabling more timely analysis. That means our insights will be closer to the time of events, and give us improved monitoring and surveillance, better early warning and other insights that we can turn into actions. Using this as a base we can move to support precision public health and take on other innovative technologies.

We will publish data products that are designed to support decision-making and planning. We will not only publish the data, but also independent and unbiased interpretation which helps people to understand what is happening, why it is happening, and what is important. We will report the story as well as the numbers, so that what we do is useful for all our users, so that they can take the right action.

Build in alignment



We aren't delivering in a vacuum.

We will take responsibility for being open about the work we do and finding out what other work is happening in the wider sector. That way we can avoid duplicating and build things that work across Wales for everyone.

Align with the long-term strategy

The [Public Health Wales Long-Term Strategy](#) is the wider strategy for our whole organisation, and what we do with digital and data needs to line up with what we do in each other area if we're going to make a difference to people's lives. Using digital and data better is a priority in the long-term strategy, alongside health protection, improving health services, screening, better evidence and more. There are milestones for the next few years that show some of what we're going to do.

The long-term strategy is our link into other key national and international legislation and strategies like the [Wellbeing of Future Generations](#) and the [UN Sustainable development goals](#).

Align with standards

Using recognised national and international standards and guidance will improve the way our services work and can connect to other services and organisations. We have a responsibility to ensure that our systems can talk to each other without risking safety, and that interoperability comes from using shared, open standards.

Aligning with international standards such as those recommended by the World Health Organisation and integrated through the WHO Collaboration Centre will allow us to benchmark against and collaborate with other countries to improve health and wellbeing around the world.

Aligning with standards in Wales ensures a focus on what is specific to people in Wales, like our Welsh language needs.

Using the NHS Wales data dictionary and HL7/FIHR for our data means we can exchange data with our NHS Wales family. Also, by using the same standards across Wales we can build confidence in the quality of our systems will be easier to integrate with other projects. Common ways of working will help us to work together better in the future.

We need to use national standards to govern our products too. When we publish data and statistics, they should meet the [code of practice for statistics](#). That way, people who look at our data can be assured that what they read has been produced to a high quality, is trustworthy, and is useful.

Using open standards isn't just about the data and systems, it also means having clear, repeatable methods for our work and keeping clear documents to show what we have and govern our services well and fairly. Standards like ISO27001 for protecting data include particular skills and knowledge that our teams need to have and physical barriers or air-gapping to ensure security.

Align with programmes

We know that aligning our approach with wider NHS teams will make our services more efficient. For example, our NHS colleagues have just released the NHS Wales App. If we can develop services that can use that platform then we won't have to design and build a mobile app for our own services.

SERVICE STANDARDS

We will follow the **12 Service Standards** outlined by the Centre for Digital Public Services in Wales

1. Focus on the current and future wellbeing of people in Wales
2. Design services in Welsh and English
3. Understand users and their needs
4. Provide a joined-up experience
5. Make sure everyone can use the service
6. Have an empowered service owner
7. Have a multidisciplinary team
8. Iterate and improve frequently
9. Work in the open
10. Use scalable technology
11. Consider ethics, privacy and security throughout
12. Use data to make decisions

There is so much effort and activity going into improving NHS Wales services right now and Public Health Wales is just one part of a much wider picture. So, whether we're thinking about writing a new report, building a dashboard or transforming a digital service, it's important that we know what else is on the horizon. It means we shouldn't start something that has already been started elsewhere – instead we will add our effort to the existing work. By bringing our users needs and sharing our skills we will hopefully help to deliver something that works for everyone.

REGISTERS

We looked at all of our registers to find whether there were core purposes common to all registers.

Overall, whether they are for disease or conditions we found a purpose common to all the registers that we keep is **supporting the health and wellbeing of people in Wales.**

But each of our registers is kept in a separate system at the moment. That means we have to collect some information lots of times and keep duplicates in different places. We think **we can save time** and have better information if we find the data that is the same across the registers and store that only once as a reference set.

Then we can test whether our information is being used to make a difference. If it is then we'll know it's useful to keep doing it. If not then we can move our effort elsewhere.

There is a project being run across Wales at the moment to link up our electronic prescribing – we need to ensure we are aligned with it so that we can continue our public health work in areas like monitoring Anti-Microbial resistance. If we do this well then people who prescribe will be able to see if they should prescribe different antibiotics to get the right effect.

We need to be really closely aligned to the Laboratory Information Systems programme. That's because Public Health Wales runs the labs for hospitals in Wales, and we need to make sure that all our lab machines can talk to the new systems so that we can get the right results back to people as soon as possible.

The biggest digital and data programme across NHS Wales at the moment is the National Data Resource. It's really exciting to think that soon we could have a new way of sharing information within the NHS in Wales

to deliver better healthcare. We need to be able to meet our responsibilities as a node in this distributed network. Our registers of information should be easy for anyone in the NHS family to access for the right reasons.

Of course, aligning with NHS Wales is only a small part of the picture. We need to share information and align projects with our partners in the NHS in England, Scotland and Northern Ireland. We need to benchmark our information with countries across the UK and Europe, and when there are epidemics we need to coordinate seamlessly across the UK and the world. The easier we can make it to share securely and swiftly, the more time we have to help the public manage sudden outbreaks of disease.

Equal and fair access

We want to share information efficiently and well, like we did during COVID, to encourage fair and equal access to our data in PHW and across the NHS. By reusing our data we can reduce the burden on services and service users. By creating and publishing good catalogues of our data and documenting our systems

and architecture, people can find our data when they need to. We will put in place clear sharing agreements and governance processes so that we can make sure that access is for the right reasons and is safe, legal, and effective.

The assumption will be that we can share information for the public good, and it will be our responsibility to make sure it can be shared securely. We'll design from the beginning with sharing in mind. In sharing openly and transparently, we increase the value of our services and earn the trust of others. This is what we mean by open by default, secure by design.

We'll also need to make sure that digital services are an integrated part of each whole service, not separated. The products we offer should be available to everyone. Noone in Wales should be impaired or unable to get services because of the way we deliver things. That means we need to find more ways to listen to people who could or should use our services but don't.

Build to make a difference



We can make a measurable difference to health and wellbeing through powerful, actionable data and analysis, and innovative, efficient digital tools.

DIABETIC EYE SCREENING

Diabetic Eye Screening Wales (DESW) is transforming its digital service together with the people who use it.

Following a successful **Discovery**, which found some clear issues:

- Lots of people do not attend appointments because they can't change to a date that suits them.
- Referrals, bookings, and reporting are almost all done by hand which takes up a lot of time.

Now we have done an **Alpha** where we developed:

- A prototype for an app that people could use to receive and manage their booking.
- Automation options for referrals into the screening program
- Future options for improvements

Create together

We need to make what people need.

To achieve our principle of people first the user will be at the heart of what we do and we will embrace user centred design to create solutions and services that are designed with the actual people using them. By incorporating user research at the start of every project, the focus will shift from us as an organisation to all the users wherever they are. Our teams are users too and they also need the opportunity to help create the services they run.

When we develop an existing service, we can measure its efficiency by assessing the value it gives to its users. Our new user centred design team will be able to help services align to the service standards as they begin a new cycle of continuous improvement based on user need.

We'll keep increasing our groups of users in different areas so that we can have a good mix of people without putting too much pressure on a small group of people. We'll develop our user research abilities so that over time we can do more discoveries ourselves, without needing help from external partners.

AGILE DEVELOPMENT

Be where people are

We have recently completed a discovery around our web estate. It highlighted that we have a very spread out set of websites that aren't really linked by design or by address. People said that it was not easy to understand what sites were part of Public Health Wales or what we were for.

We will modernise our web presence in stages, rationalising our estate and making sure that it is easy to see we are a part of the NHS, a brand that people can recognise and trust. We will write for the web and publish with the accessibility standards in mind. That means we can use .pdfs if something is going to print, but the official version should be in HTML5, so that it can be accessed on any screen and by screen readers.

We will build our web presence around the journeys that users need to take, rather than around the part of the organisation that creates the content. We'll monitor the impact of our advice and publications and use what we learn to make our future writing even more useful.

We'll keep up with the changes in social media, understanding where people like to go to get their information and their entertainment. We'll monitor sources of misinformation and work with people and providers to be a clear beacon of honest advice and support.

Agile Mindset

In order to make meaningful changes that focus on what people need, we will develop our capability in modern delivery approaches like Agile, Lean Six Sigma and User-Centred Design. Rapid cycles of development and delivering things that were "good enough" that could be improved once they were already live worked well for us during COVID. This approach was designed for software development but can be used more widely and is about getting working products on the ground rather than waiting for perfection.

We will promote and champion Agile ways of working throughout the organisation, using our professional families and connecting with the portfolio management group and Improvement group to share and develop skills. Pragmatic delivery is useful in data analysis too, where finding the most useful data and sharing it when it is most useful can be more effective than waiting until the data are perfect but the usefulness has been reduced.

Agile development typically goes through several stages:

Discovery – find out from users what they need from a service. See what is hard to do and what could be improved or created to meet the biggest needs. What is the smallest service that can meet the needs of users?

Alpha – test the bits that will be the hardest to make. This bit often has failures in it, but learning from those failures often shows the best way to build something.

Beta – take what was learnt in the alpha to build the smallest working service, called the **minimum viable product**. Test it with lots of people and make sure it works well.

Continuous deployment – even while going live with the minimum viable product, testing is already going on to add or improve things. With a live service we can keep on developing until we meet all our user needs.

We will review the outcomes of the three discovery projects, two alphas and a review that we delivered in early 2023 across Public Health Wales. We'll work to support the organisation prioritise what's next. Depending on what is decided, we'll work on and support any further discoveries, alphas, betas and deployments.

By being open and collaborative while we iterate we hope to encourage engagement from all kinds of users, and get honest feedback from people who haven't worked like this before. We can then make changes and work through any issues from an early stage. We believe the result will be a better user experience and provide us with better knowledge for future projects.

Our development teams will focus on the work that has been prioritised with service managers, service owners and the user-centred design team. That means that our backlog/programme of work will always be aligned to the biggest priorities of our users. We'll keep testing new changes, and clearly document our work so that others can help if we need more resource.

APIs are our Lego

Regardless of its shape, a Lego brick can connect to other Lego bricks because they all have a standard connection. We want our services to be able to connect with other services so that users can have a seamless journey. There are plenty of ways to connect components with computer code, but that can be a bit like glue, so it's hard to separate the pieces when one gets old or broken.

Application Programming Interfaces (APIs) are small components that we can use to connect systems together more like Lego. They define how components talk to each other and set the terms for data to move between systems. That means when we want to swap out one piece for another, we should be able to do it faster and more effectively. We'll try to ensure that we have clean, public APIs when we create systems, and that when we buy services they have APIs that we can use so that we aren't locked in with glue.

Harness new opportunities

There are so many new opportunities for Public Health Wales to engage with. We will work with health boards to understand what better services could look like and link more of our data to improve people's experiences.

We will be bringing our pathogen genomics group into a new site alongside the human genomics programme. There are opportunities to study diseases for markers that might show if some people would be more susceptible or need different treatment from the usual.

We need to understand the opportunities for keeping people healthy at home. There is wearable technology, which leads to the possibility for remote monitoring and a true hybrid or digital ward. For instance, people who are at higher risk but otherwise fit could be living at home, but with ward monitoring and be admitted if the readings indicated danger.

As mobile technology gets more efficient there may be opportunities such as using mobile phones to take eye screening pictures from our own homes. Electronic prescriptions could offer to set reminders if it is hard to remember which medicine to take and when. That sort of reminder could be integrated into the NHS App, which might also hold the prescription itself. Health and wellbeing information that can be shared on a trusted application is more likely to be trustworthy and less likely to be a scam than information found on the internet.

Artificial Intelligence

It is likely that AI will become more and more important to public health. It could drive real changes in diagnosis and treatment, health promotion and prevention, and in operational efficiency. It could help to look after people in their homes, and help people live healthier lifestyles that keep them out of hospital. We need to make sure that we are making the most of the opportunity AI brings.

But there are also risks. However AI is used, whether it is to help identify risks, or through developing personal assistants to help with health care, or to support diagnosis, it must be safe, and it must be fair. We will work with our colleagues across the NHS, in Welsh Government, and more widely, to make sure any AI adopted meets agreed standards of fairness and safety and benefits the people of Wales.

AI technology is a long way off being able to replace humans. It still, legally, ethically, and technically, requires human oversight. Even so, it has an important role to play in health and care, alongside human skills and expertise. We have recently applied to develop an AI Commission with a view to supporting activity in this area in Wales.

Measure influence

It isn't enough to provide the right information at the right time, we need to explain it clearly, and help to take action based on the insights we get from analysing information. The story told by clear information should guide us to making the right next steps.

Through excellent data and analysis, we will inform timely decision-making, influence Government priorities, and enable the people of Wales to take positive action on their own health and well-being.

By building on our solid foundations, we will be able to harness innovative, data-driven technology for better public health such as wearables, remote monitoring, mobile screening, and technology that can support healthy behaviour changes.

Conclusion

Are we there yet?

How will we know when we're there or if we're going in the right direction?

We will evaluate! In each of our three areas, we will measure whether we are progressing, and we will consider whether the work we do is aligning with the 5 principles.

Evaluation will help us to understand our progress towards the goals of this strategy, and to identify the mechanisms which are contributing to our success or acting as barriers to us moving forwards.

We will develop an evaluation plan which captures progress in line with the 5 guiding principles of this strategy and use the information we collect from the evaluation to inform how we work in the future. Some questions might be:

People first – are our models of engagement to put people first in the development and delivery of our services effective? Do our people feel valued and empowered to take forwards our data and digital strategy?

Accessible, fair, and equal – Are our services accessible to everyone in Wales who needs them? Are there differences in access or uptake across different groups? Do we collect the right data to enable us to answer this question? How is digital a barrier, or an enabler, to the different types of services we provide?

Open by default, secure by design – to what extent are our services valued by our users? What is the level of trust in Public Health Wales? Are there differences across different groups?

Efficient: Are we more efficient in our processes?

Focussed on the future – Do we provide data which informs decisions to improve health in Wales? Are we delivering the right insights in the right format to inform our work and that of others?

And of course, using the digital service standards and the data publication standards that we are committed to will provide many opportunities to evaluate and assess our progress

We will collect the evidence to help us understand these questions through different approaches for example talking to our people, surveys with our service users, case studies and ensuring we hear from a range of people who are representative of the population in Wales we serve.

And then we will start the next iteration.

Collaborative decisions

In order to make shared decisions about what is most important for our digital and data teams to do, we are developing a Business Design Authority. This is a group where individuals from every part of Public Health Wales come together to share responsibility for deciding what is most important to do first.

Making decisions about priority will encourage us to be aware of each other's needs and to share our resources and knowledge based on the needs of the wider organisation. Shared ownership of decisions at a working level will lead to more collaboration when solving shared problems. We will also share accountability for spending public money wisely, by assessing the work that gets done against national standards. By putting the group at the level of people who are doing the work, we get

a clear view of which parts of PHW have the same needs – so we won't build new things more than once.

The Business Design Authority will support people creating services fit for purpose in an organisation where digital and data are fundamental in the ways of working. In

BENEFITS

During the Diabetic Eye Screening Alpha phase we found that around 15,000 people a year are referred to the programme from GP surgeries.

Each person is referred with a form written by hand or in an email.

If we can make a component to transcribe the referrals automatically then we would save around 4,000 hours of time for our teams.

That extra time could be spent arranging more appointments or helping people who find it hard to attend. That means we could have more chance to prevent treatable blindness in diabetic people.

line with the terms of reference the BDA will offer guidance to meeting the Welsh public sector service design principles and the UK Technology Code of Practice.

In order to make the **what** happen, we need to look at the **how**.

We are going to take lots of little steps rather than a few big steps. That's because there are a lot of different ways to achieve an outcome, but not all of them will work for us, or for the people we serve. With digital services or data products, it is often more useful to get a small thing up and running to see what it does than to spend a long time trying to figure out what will work before testing anything.

Resources and funding

The strategy will be delivered both through the normal business of Public Health Wales and in partnership with collaborating organisations such as Welsh Government, other NHS Wales organisations and wider

national and international partners..

Show how we benefit

Each time we do a piece of work, we're likely to find out some pain points for users. By examining what makes it hard for people to do what they need to do, we can find where a change is likely to make a difference. In each case.

Broadly, if we do it right, it should result in healthier, happier people, or more people being served, or fewer people needing to be served in the NHS

Next steps

We're going to prioritise the work we need to do in the next few months. We'll start applying for funding for work we can't afford to do ourselves at the moment. We'll share our strategy and see what other parts of Wales are planning, so that we don't accidentally duplicate anything.

After we've done that, we'll try to learn from what we've done, change according to what we've learnt and then do it again.

We'll do that for 12 months, see how we go and then revisit our strategy. If it's still working and still seems like the right approach, we'll scan the horizon and start another round. If it's not delivering the results we need, we'll do some more user research and try a different way.