CYFARFOD BWRDD PRIFYSGOL IECHYD
UNIVERSITY HEALTH BOARD MEETING

DYDDIAD Y CYFARFOD: **DATE OF MEETING:**	26 January 2023
TEITL YR ADRODDIAD: **TITLE OF REPORT:**	External Review of the Llwynhendy Tuberculosis Outbreak
CYFARWYDDWR ARWEINIOL: **LEAD DIRECTOR:**	Professor Phil Kloer, Executive Medical Director & Deputy Chief Executive Officer, HDdUHB Professor Fu-Meng Khaw, National Director, Health Protection and Screening Services; Executive Medical Director, PHW
SWYDDOG ADRODD: **REPORTING OFFICER:**	Professor Phil Kloer, Executive Medical Director & Deputy Chief Executive Officer, HDdUHB Professor Fu-Meng Khaw, National Director, Health Protection and Screening Services; Executive Medical Director, PHW

Pwrpas yr Adroddiad (dewiswch fel yn addas) **Purpose of the Report** (select as appropriate)
Ar Gyfer Trafodaeth/For Discussion

ADRODDIAD SCAA
SBAR REPORT

Sefyllfa / Situation

The purpose of this paper is to provide the Public Health Wales NHS Trust (PHW) and Hywel Dda University Health Board (HDdUHB) Public Board with the completed External Review Report and to outline the findings and recommendations made by the external review panel.

The report is the product of the jointly commissioned external review of the management of the Llwynhendy Tuberculosis Outbreak incident for which the outline and Terms of Reference was presented to both Public Board meetings on 30th September 2021.

Cefndir / Background

On 9th November 2010, an outbreak investigation was initiated into a cluster of active Tuberculosis (TB) cases with the same genotype profile, occurring in the Llwynhendy area of Carmarthenshire. By the end of 2018, 29 (twenty-nine) cases (in 28 individuals) of active TB disease were linked to the outbreak.

In the intervening years, the outbreak investigation was re-opened and closed twice. In November 2018 the outbreak investigation was re-opened for the fourth time in response to new cases of TB. The outbreak control team was re-established and wider contact screening was carried out in the local community.

In 2019, a rapid internal review was carried out by PHW, to identify immediate actions and to make recommendations for the ongoing management of the outbreak. The findings of the internal review were presented to an In-Committee Board meeting (HDdUHB) and Board

Private Session (PHW) in November 2019. One of the key recommendations of the review was to commission, jointly with PHW, an external review of the outbreak and its management, to inform the approach to the management of TB disease in Wales. The Board agreed to proceed with the external review.

In response to the COVID-19 pandemic, a decision was taken early in 2020 to pause the review. In June 2021, following a meeting with PHW, the Chief Executives of HDdUHB and PHW agreed that the external review should be resumed at the earliest opportunity. The scope and terms of reference was presented to the September 2021 Public Board meetings of both PHW and HDdUHB.

The purpose of the review was to examine:

- Whether the management of the outbreak since 2010 overall, and at each stage, was conducted in accordance with best practice guidance in place at the time of each phase of the outbreak (with reference to national strategies, strategies in other parts of the UK, WHO guidance, plans, guidelines and organisational protocols and procedures);
- The effectiveness of the respective involvement of Public Health Wales and Hywel Dda University Health Board in the control of the outbreak and treatment of latent or active TB cases at each stage (including the current phase) including the people and financial resources provided by both organisations in response to the outbreak to prevent disease transmission and treat identified TB disease;
- The governance arrangements (including reporting and escalation) for informing Teams and Boards of the outbreak and providing assurance to the Boards of each organisation;
- A review of any reported cases of: 1. People identified over the course of the outbreak who have died where the death certificate identified that TB contributed to or caused the death, and 2. People that have developed active TB;
- The effectiveness of any policy(ies) relevant to TB disease prevention, treatment and control including the management of outbreaks applicable in Wales in each phase of the outbreak and the reporting arrangements within Wales since the outbreak was first declared in 2010;
- The effectiveness of external expert advice sought and obtained including liaison with other organisations, for example, Public Health England (and UK Health Security Agency from October 2021) or the British Thoracic Society.

The review was also to identify lessons learned and make recommendations to Public Health Wales and Hywel Dda University Health Board for improvement which may also be recommendations for other key stakeholders.

This External Review Report (Appendix A) provides the findings of the review team.

Asesiad / Assessment

The review has been undertaken as part of the legal duty of candour for Public Health Wales and Hywel Dda University Health Board and accordingly, the communication and dissemination of the findings has adopted an open and transparent approach.

The recommendations of the external review are:

(1) The outbreak has not yet concluded and the high level of latent TB infection in the population implies further risk. This risk is heightened because the active disease in this population is predominantly pulmonary and therefore more infectious. Although the level of active TB infection is low in West Wales, delayed presentation in

unrecognised cases may lead to further outbreaks and deaths. The level of awareness amongst the public and their health care professionals must be therefore increased and maintained. This also applies to trainee health professionals.

(2) Any future outbreaks should be overseen by PHW from the outset with a TB -specific standard operating procedure for the conduct and recording of outbreak management. The current Standard Operating Procedure and Outbreak Control Team policy needs to be updated in this respect. The latter needs to be developed alongside modern data analysis and Whole Genome Sequencing typing so that outbreaks are identified and contained. Comprehensive contact networks of all cases should be recorded electronically and plotted with social network analyses undertaken to ensure links between cases are uncovered quickly and easily.

(3) Funding should be identifiable ahead of time for outbreaks of infectious diseases so that such outbreaks can be managed in a timely and effective manner without the need for time-wasting discussion.

(4) The local TB service has improved but still has inadequacies. In particular, cross-cover arrangements need to be in place for annual, sick and study leave in order to prevent delays in treatment. Pharmacy and administrative support needs improvement. Succession planning for the TB Specialist Nurse also needs to be clear.

(5) At a national level, the Cohort Review Programme needs to be supported with adequate funding for each contributing health board.

(6) Welsh Government should support both the Cohort Review Programme and the proposal for a National Service Specification that includes the development of a TB pathway to tackle delayed diagnosis (e.g. investigating cough lasting longer than three weeks).

(7) Wales does not seem to be properly prepared for the challenges of new migrants, refugees, and the occurrence of future drug resistance. These factors should be included in a future TB plan supported and funded by Welsh Government.

The findings and recommendations made within the report will be taken forward and addressed by both Public Health Wales NHS Trust and Hywel Dda UHB with support from external partners. This action will be reported through each organisation's Quality, Safety & Experience Committees and reported back to Public Boards against progress made. The outline action plan to address each recommendation for HDdUHB is contained with Appendix B. The action plan for PHW is contained within Appendix C.

A Communication Plan has been developed to communicate the findings and recommendations of the external review. This includes the production of bilingual resources including media statements to correspond with the discussion of the report at the Public Board meetings, together with a set of public facing Frequently Asked Questions (FAQS). As in November 2021, a specific action has been taken to write personally to individuals who were 'directly affected' by the review. The original list of individuals 'directly affected', which was approved by both Executive Medical Directors, has been re-examined as of 28th November 2022, resulting in a small number of additional individuals (who have now attended TB screening) being added to a revised list, with some other minor changes also being made

where appropriate e.g. to residential address details. A suite of letters has been prepared and these are being sent out to correspond with the Public Boards' discussion. The letters advise individuals of and provide access to the publication of the review report. The letters also provide details of a dedicated 'call line' which has been established, should individuals wish to seek further information, together with contact details for 'Putting Things Right' teams, which oversees the management and response to concerns raised.

A draft report was presented by the chair of the review panel to both Boards' meeting in private session on 25th October 2022. Following this, both Executive Medical Directors met with the chair of the review panel and provided written feedback collated from Welsh Government, HDdUHB and PHW.

The final report was issued by the review panel on 2nd December 2022.

Throughout the review period, regular meetings have been held jointly between PHW and HDdUHB to monitor progress of the review and to ensure that the review panel was adequately supported in its work. An Oversight Group, jointly chaired by the Executive Medical Directors of PHW and HDdUHB, approved the Communications and handling plans to support the publication and dissemination of the report.

Argymhelliad / Recommendation

For the Board to **RECEIVE** and **NOTE** the completed external review report and the findings and recommendations made, together with the outline action plan in response. Progress against the action plan will be monitored and reviewed by the Quality, Safety & Experience Committees of both PHW and HDdUHB on a 6 monthly basis.

Amcanion: (rhaid cwblhau) **Objectives: (must be completed)**	
Cyfeirnod Cofrestr Risg Datix a Sgôr Cyfredol: Datix Risk Register Reference and Score:	n/a
Safon(au) Gofal ac Iechyd: Health and Care Standard(s):	1.1 Health Promotion, Protection and Improvement 3.1 Safe and Clinically Effective Care
Amcanion Strategol y BIP: UHB Strategic Objectives:	1. Putting people at the heart of everything we do 2. Working together to be the best we can be 3. Striving to deliver and develop excellent services 4. The best health and wellbeing for our individuals, families and communities
Amcanion Cynllunio Planning Objectives	4D Public Health Screening
Amcanion Llesiant BIP: UHB Well-being Objectives: Hyperlink to HDdUHB Well-being Objectives Annual Report 2018-2019	4. Improve Population Health through prevention and early intervention, supporting people to live happy and healthy lives

Gwybodaeth Ychwanegol: Further Information:	
Ar sail tystiolaeth: Evidence Base:	n/a
Rhestr Termau: Glossary of Terms:	n/a
Partïon / Pwyllgorau â ymgynhorwyd ymlaen llaw y Cyfarfod Bwrdd Iechyd Prifysgol: Parties / Committees consulted prior to University Health Board:	Public Health Wales

Effaith: (rhaid cwblhau) Impact: (must be completed)	
Ariannol / Gwerth am Arian: Financial / Service:	n/a
Ansawdd / Gofal Claf: Quality / Patient Care:	n/a
Gweithlu: Workforce:	n/a
Risg: Risk:	n/a
Cyfreithiol: Legal:	n/a
Enw Da: Reputational:	n/a
Gyfrinachedd: Privacy:	n/a
Cydraddoldeb: Equality:	n/a

LLWYNHENDY TUBERCULOSIS OUTBREAK EXTERNAL REVIEW REPORT 2nd DECEMBER 2022

Jointly commissioned by Public Health Wales and Hywel Dda University Health Board

Lead Reviewer – Professor Mike Morgan

Contents

Executive Summary

An outbreak of tuberculosis (TB) related to a public house in Llwynhendy was identified in September 2010. Cases linked to this outbreak continue to occur more than a decade later. We estimate that there have been at least 31 cases of active pulmonary TB and perhaps more than 300 cases of latent TB infection associated with the outbreak. We have also observed that there is a higher-than-normal rate of latent TB infection in the local population that has not necessarily occurred because of this particular outbreak but may become the source of future outbreaks. The population at risk is UK-Born people who develop highly infectious pulmonary TB that may, due to their untypical demography go undiagnosed for longer than usual. This implies that, even in this area of low incidence for TB, there is a potential for further outbreaks which requires continuing vigilance.

The original source of the outbreak was traced to an individual worker at a public house in Llwynhendy who, due to a delay in the diagnosis of their pulmonary TB, was highly infectious for a prolonged period. The causative strain of TB was not unique to this outbreak having been identified before in England and in Wales. It is not known how this index case acquired the infection but subsequent genetic analysis points to an affected pub user in 2007. Following the diagnosis of the first case, the public health response included the initiation of an outbreak control team (OCT) and the deployment of contact tracing staff to identify onward transmission of infection. It appears that this initial response was inadequate mainly because it failed to recognise the highly infectious nature of the source and therefore did not extend the contact tracing sufficiently. As a result, infected people were unrecognised and developed active disease, passing the infection on to others. The outbreak control team was closed down prematurely and had to be re-opened on three further occasions as more cases presented including one fatal case which was highlighted in the media. The subsequent public health management improved considerably

and culminated in a large-scale community screening event that disclosed a high level of latent TB infection in the population.

The clinical management of individual patients with TB at the beginning of the outbreak, though satisfactory, was uncoordinated because of the lack of a dedicated TB service and a lead clinician. Also, at the outset, the local respiratory healthcare provision was inadequate due to service re-organisation and recruitment difficulties. This has largely been addressed with the appointment of a lead consultant and a dedicated TB nurse. However, changes are still needed to improve the TB service.

The relationship between the Health Board (HDUHB) and Public Health Wales (PHW) also attracted scrutiny. Although, the Health Board had the statutory responsibility for outbreak control, it should have been subject to greater oversight from PHW at the beginning. The initial response was deemed inadequate and the outbreak did not feature in the minutes of the boards of either organisation until 2019, though it is quite possible that discussions were occurring below this level. By this time there had been at least one death, widespread community screening and considerable public anxiety. The in-house review by PHW in 2019 recommended the introduction of a more structured approach to TB outbreaks but so far this has not materialised.

England has had a collaborative strategy for tuberculosis which has been in place since 2015 with a focus on disease control and migrant testing. TB rates in Wales are lower than England but the mortality rate is twice as high. Wales does not have a national strategy for tuberculosis although one has been proposed by the Welsh Respiratory Delivery Group. So far this has not been formally supported by the Welsh Government. There is an informal TB Cohort Review run by the Respiratory Delivery Group which should be also given a formal footing as part of a National TB Strategy.

1. Introduction

Tuberculosis (TB) is an infection which remains a problem in both the developed and the developing world. Despite the availability of effective treatment, it accounted for 1.5 million deaths globally in 2020 and remains a priority for the World Health Organisation (WHO). In the United Kingdom there are approximately 350 preventable deaths per year related to tuberculosis. The incidence of TB has gradually fallen in the United Kingdom primarily because of public health measures, improved affluence and effective treatment. However, TB has not been totally eradicated and, over the years, repeated relaxation of public health surveillance has led to a resurgence of cases. At this time in the UK, cases of tuberculosis are mostly, but not exclusively, in the urban population and 76% of these are born abroad (UK HSA 2021). Once diagnosed, TB remains largely treatable though drug resistance is a growing concern. This is the context in which the TB outbreak in Llwynhendy in 2010 will be reviewed.

2. Tuberculosis in the United Kingdom

In England, where the figures are available, the incidence of TB has fallen dramatically from the beginning of the 20th century and fell further with the introduction of anti-tuberculosis therapy. By the beginning of the 21st century the numbers had stabilised but then started to rise again and in 2011 there were 8280 cases (Fig 1). The Collaborative (Public Health England and NHSE) Tuberculosis Strategy for England was launched in 2015. This required focus on diagnostics, drug resistant TB, underserved populations, LTBI migrant screening, workforce and BCG. The incidence of TB almost halved in the subsequent decade, but this progress appears to have stalled and cases have risen slightly following the Covid pandemic. The UK is considered by the WHO to be a low-incidence country. However, in England in 2020 there were 1091 UK-born individuals with TB, the majority (68%) of whom had pulmonary disease. It follows that UK-born

people are likely to be more infectious because they have a higher incidence of pulmonary TB.

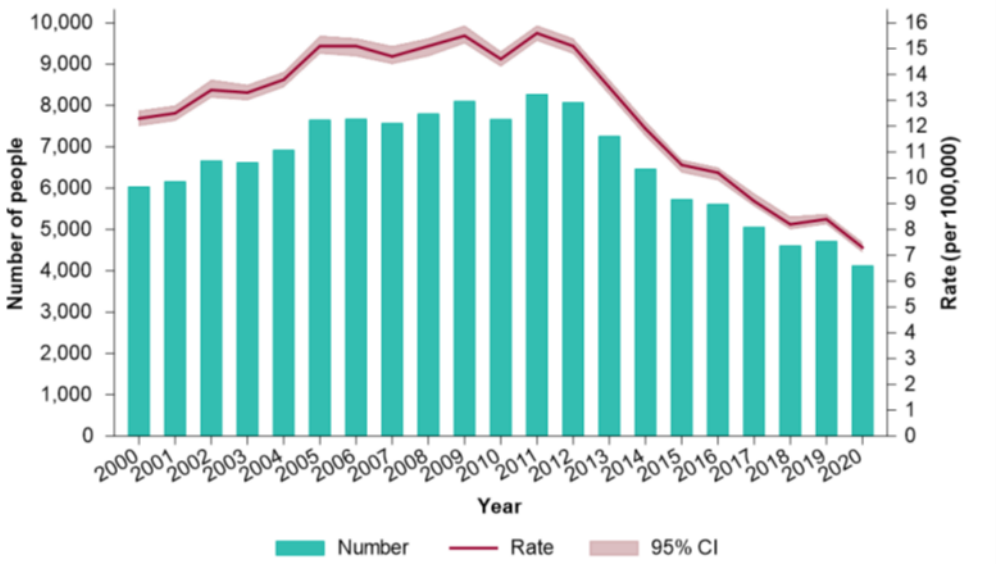


Figure 1. TB cases and rates in England (2000-2020)

Like the rest of the UK, the pattern of disease in Wales is predominantly seen in non-UK born people in conurbations and is a mixture of pulmonary and non-pulmonary disease. The latest report on tuberculosis in Wales published in 2019 documents a steady decline in incidence with case numbers for the whole of Wales now around 100 per annum (Fig 2). Like the rest of the UK, the pattern of disease in Wales is predominantly seen in non-UK born people in conurbations and is a mixture of pulmonary and non-pulmonary.

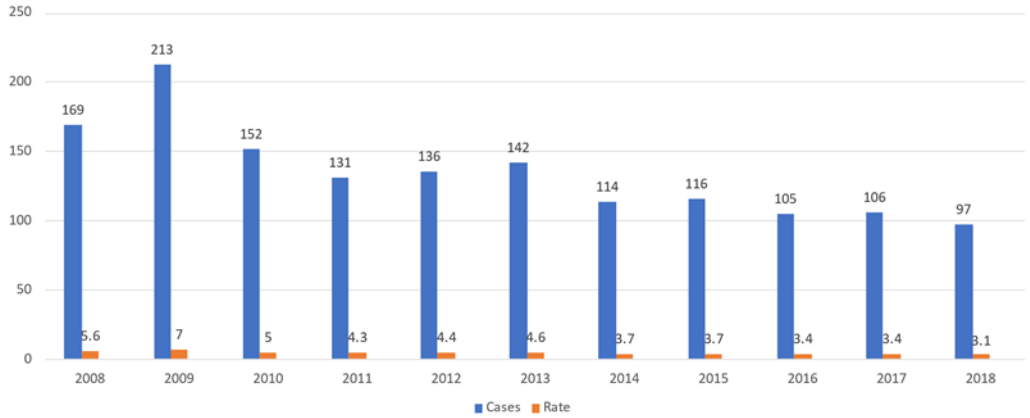


Figure 2. TB cases and rates in Wales 2008-2018

TB case rates are very low in Hywel Dda compared with other parts of England and Wales but they are not negligible (Fig 3). Peaks occurred in 2004, 2006, 2012 and 2014.

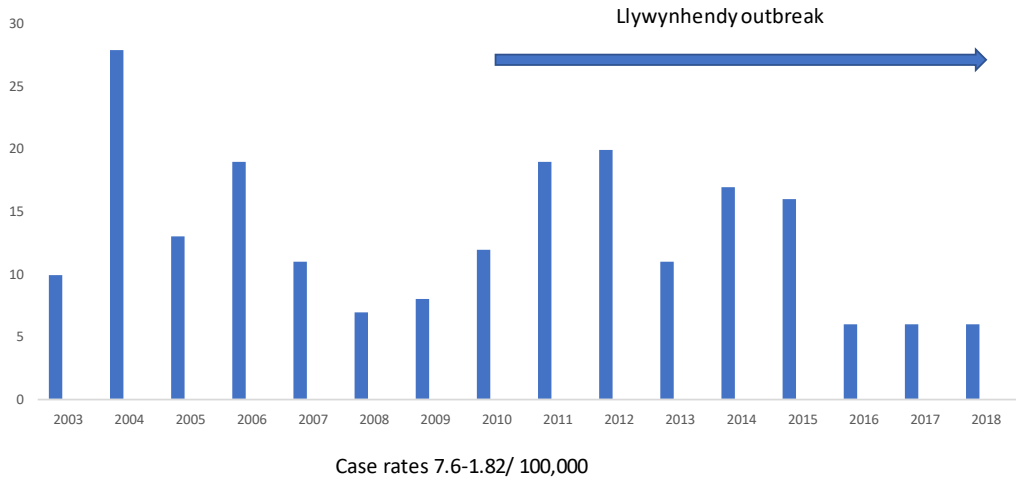


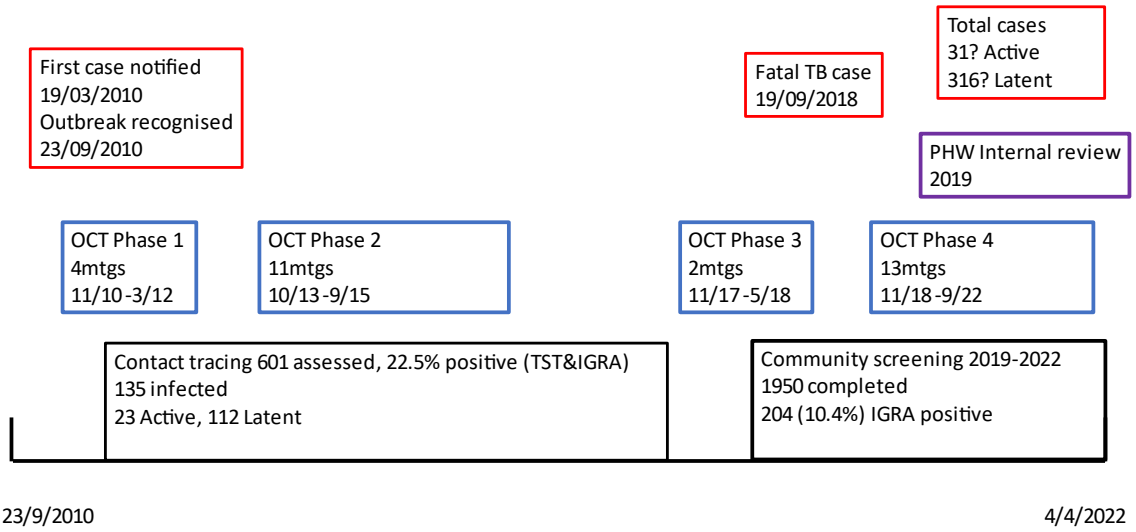
Fig 3. Hywel Dda (Pop 384,000. TB case nos 2003-2018)

3. The Llwynhendy Outbreak

The first case in the outbreak was notified in March 2010. Two further cases were subsequently identified and an outbreak was suspected in September 2010 and confirmed at an outbreak control team meeting on 11th October 2010. The source of the outbreak (the index case) was considered to be an individual worker of a public house in Llwynhendy though it remains uncertain how they acquired the infection. A case with a similar type of TB organism had occurred elsewhere in Carmarthenshire in 2005 but had no known links to the index case. A further case in 2007 later identified by whole genome sequencing (WGS) may have had links to the public house. The exact numbers affected by the Llwynhendy outbreak are not clear but could be at least 31 cases of active disease. Confusion about exact number has arisen because in some cases culture was not available to confirm the strain and because the case numbering throughout the outbreak was inconsistent, sometimes including the 2005 case that was later deemed to be unrelated to the Llwynhendy outbreak. Cases of TB with known connections to a local public house in Llwynhendy continued to be identified up until July 2020 for the active cases and April 2022 for the last latent case. The review has not considered any cases which may have come to light since March 2022 when the review was initiated. The geographical spread of cases related to the outbreak was predominantly local but some cases extended to Swansea Bay and beyond.

The response to the outbreak was overseen by an outbreak control team (OCT) containing clinical and public health personnel. The outbreak investigation was opened and closed three times resulting in four phases of team meetings between 2010 and 2022 (Fig 4 below).

Outbreak events



4. Case definitions and microbiological typing

There is no precise definition of an "outbreak" but it is taken to be more than two cases with epidemiological and microbiological links to a discrete source. In this case, the worker was considered to be the index case and their contacts would account for the subsequent spread of infection and further escalation of the outbreak. To trace the course of an outbreak the epidemiological evidence is linked to the microbiological strain of the infecting organism to ascertain that it is the same organism that is passed on. At the beginning of the outbreak the microbiological identification used was called MIRU-VNTR which is a PCR based technique for genotyping the organism. In this case the genotype is described by number as 32333 2432515324 which is a strain that had previously been isolated in the West Midlands in 2006 but not necessarily linked to the outbreak in Wales.

During the course of the Llwynhendy outbreak MIRU-VNTR typing has been superseded by whole genome sequencing (WGS) which is a higher resolution technique to confirm identity or near-identity between two strains of the causative organism, Mycobacterium tuberculosis (MTB). WGS would now be considered the gold standard for identification of the bacterial

strain related to an outbreak and is now routine in Wales. We now know that 18 of the outbreak cases with positive cultures have been further characterised by WGS though some of the earlier samples were not suitable for further analysis.

5. Rationale for an external review

The outbreak of TB in Llwynhendy has continued for over a decade and cases are still presenting. Furthermore, the necessity for population screening has resulted in local and national publicity. A fatal case of TB has also drawn attention to the outbreak. In 2019, a formal complaint about the conduct of the outbreak management was received by Hywel Dda UHB and PHW. This resulted in an internal inquiry and de-brief. Consequently, a decision was made to obtain an independent review of the outbreak management from its initial recognition to the present day. The purpose of the review is set out in the terms of reference (appendix 1). The review should identify lessons learned and make recommendations.

6. Conduct of the review

Members of the review panel are listed in the appendix and include clinical experts on tuberculosis, contact tracing, microbiology and public health. Virtual meetings took place over six months between March and September 2022. All relevant and available documents (see appendix) were reviewed over this period. In addition, a number of individuals, connected to the outbreak, were interviewed (see appendix) though we did not attempt to contact those involved at the beginning who had retired or left employment. A site visit to Prince Philip Hospital, Llanelli, took place on the 3rd August 2022 to examine the available clinical records of all cases diagnosed with active TB and their contacts. The panel was provided with administrative and organisational support by Hywel Dda University Health Board (HDUHB) and by Public Health Wales (PHW.) The review was jointly commissioned

by PHW and HDUHB but no members of either organisation were involved in the discussions of the panel.

7. Findings

The outbreak was first recognised in September 2010 when a cluster of similar cases of TB were identified with a connection to a public house in Llwynhendy. Formal designation as an outbreak followed with the formation of the first outbreak control team meeting on the 9th November 2010. Over the subsequent 12 years, the outbreak management was opened and closed on three occasions leading to four phases of the outbreak to be considered. To date there have been a total of 30 outbreak control meetings. For each phase, the aspects to be considered are:

- The case definition and microbiological context
- The public health response
- The organisational response
- Contact tracing
- Clinical management
- Resource constraints

The first case that appears to be genuinely related to the public house in Llwynhendy source was a 71 yr old female who presented in February 2010 with a three-month history characteristic of pulmonary TB. The diagnosis was confirmed on 19th March 2010. Two further cases with links to the public house in Llwynhendy were diagnosed later in July and in August 2010. These two cases reported symptoms dating from the beginning of the year. Over the years, the local incidence of TB in the area has fluctuated but cases with historical contact with the public house in Llwynhendy continued to appear. The total number of cases related to the outbreak is not clear because not all the cases had microbiological cultures that could

confirm linkage to the index strain of MTB. It is possible that as many as 35 active cases were related to the outbreak in addition to the many others, known and unknown, who are harbouring latent disease.

Phase 1 (November 2010-March 2012)

The first phase lasted from November 2010 to March 2012 and included four OCT meetings. It finished on 28th March 2012 when the outbreak was closed. There were four meetings during that period and attendees at OCTs were noted. Each OCT was chaired appropriately by the local consultant in communicable disease control (CCDC) who was a PHW employee and contained some additional representation from PHW and HDUHB.

Case definition

The initial case definition was agreed as a case of TB within the Llwynhendy area with links to the public house in Llwynhendy or any of the current cases. The cases were also characterised by the MIRU-VNTR typing (32333 2432515324). It is important to note that this strain of organism had, at the time, also been identified in 15 cases of TB in the previous 5 years in Wales. Four of these cases had been in Carmarthenshire. Although the MIRU-VNTR typings are known to suggest an outbreak they would now be considered to be less reliable than WGS and SNP distance. It is possible that some of the early cases where only MIRU typing was available may not in fact have been related. This strain, or a closely related strain therefore had been identified sporadically in England and Wales prior to the Llwynhendy outbreak and was not unique.

Contact tracing

A number of individuals considered to be at high risk of infection were invited for screening. This included family members, bar staff and members of the peripatetic darts team associated with pubs in the area.

A follow up OCT meeting took place three months later and described the results of 16 people who had attended screening, noting that 5 invitees had not attended. On this occasion, 3 of the screened subjects had positive

evidence of TB infection but no active cases were found at this stage. Meanwhile, a number of other cases of TB in the wider area were recorded but not felt to be related to the public house in Llwynhendy. It was agreed that GPs should be alerted and a statement was prepared for the media.

It was more than six months before the next OCT was held at which it was recorded that further family members of the index case had TB, some latent and some active TB. It was noted that at that stage the communication with GPs had not taken place and the statement to the media had not been taken up by the press. Further extended paediatric family screening was recommended but it was not thought necessary to screen adult contacts outside the family.

The final OCT meeting in this phase took place six months later in March 2012. In the absence of any new cases, the outbreak was considered closed at this point.

The Panel's view

The outbreak was identified promptly by microbiological surveillance once the initial patients were diagnosed. In this case, as in other outbreaks, individual patients had prolonged symptoms prior to diagnosis. This is a consequence of poor awareness of symptoms by the public and by health care professionals. We did not have access to primary care records to judge at what level this lack of awareness occurred.

The OCT was set up directly, was appropriately constituted and was chaired by a senior public health consultant. Three further OCT meetings were held but the frequency (six months between meetings) suggested that the team did not feel that the outbreak was likely to become as serious as it did. The later meetings had fewer attendees and the additional senior physical presence from PHW appears to have drifted away.

Outbreak Control Team record

The minutes of the four meetings of the first phase were available for review. There is also a draft outbreak report available, but the panel was

unable to identify a final report from the first phase. Compared to subsequent phase documentation, the minutes did not clearly identify proposed actions and when they were suggested, they were not followed through. The total number of active cases in the outbreak at this stage is also difficult to ascertain because patients infected with organisms of similar genetic typing or with lack of culture are sometimes included in the figures.

Contact tracing record

We were able to review the contact tracing paperwork for adult but not paediatric cases. In the initial phases documentation was considered poor and inconsistent. The contact tracing itself also lacked a systematic approach. Some contacts were screened either too early or after too much delay. The immune response to MTB may take up to 6 weeks to develop. The contacts who were screened early and had a negative test were not always recalled for repeat screening after 6-8 weeks. In addition, people who were identified as high-risk contacts who did not attend screening, including the darts team, were not physically pursued.

Overview of Phase 1

The Panel's view was that the initial public health management of the outbreak could have been better. The approach lacked a comprehensive strategic overview and was too casual but may in other circumstances have been adequate had the index case not been so infectious. It was obvious in retrospect that the index case was highly infectious as evident from the initial high rate of transmission (18.6% overall). The contact tracing focussed primarily on the family rather than the public house customers. There may also have been relevant environmental factors around the ventilation and extraction in the public house in Llwynhendy, but they were, apparently, unexplored. The extent of the contact screening was obviously too limited and there may have been a failure to appreciate the social interactions of pub customers who would regularly visit several other pubs. Lack of follow up of the darts team may also have reduced the effectiveness

of screening. The local services at the time were also under strain associated with the service reorganisation. The medical services were stretched because of staff shortages with locums in place and no defined TB service or lead clinician. The contact tracing will have been performed either by local respiratory nurses or by PHW nurses working in unfamiliar territory. It is possible that there was a lot more contact tracing activity going on in the background, but this is not recorded in the minutes. It is also clear that there was a lack of awareness in the local population of the illness and the need for contact tracing. It may be the case that there was a reluctance for people to come forward because of the stigma associated with TB or perhaps for other unexplored reasons. Whatever the factors involved, the initial management failed to contain the outbreak and cases with connections to the public house were still presenting with active disease over a decade later.

Phase 2 (October 2013-September 2015)

The outbreak control team was reconvened in October 2013 in response to five further cases of TB with links to the public house in Llwynhendy bringing the total at that stage to 14 cases. One of the new cases was a teaching assistant at a local comprehensive school. Eleven meetings were held in this phase until they appeared to peter out without a formal declaration of an end to the outbreak. As before, the team included environmental and public health, microbiology, and specialist nursing and medical support. On this occasion the meetings were chaired by an acting consultant in Health Protection.

Case definition

The case definition was widened to include any case of TB from the Carmarthenshire area with onset since 2009 and a VNTR profile of 32333. This definition may have been too broad given that microbiological intelligence relayed in the minutes suggested that there had been 115 cases, apparently unrelated, with a similar typing identified in England and Wales.

Contact tracing

At this point, it was realised that the contact screening from the outset had been inadequate, so plans were put in place to revisit and repeat the screening of the original contacts. The darts team were finally tracked down and agreed to co-operate. It was recognised that much of the social interaction between cases and the darts team may have extended to a second public house.

The OCT subsequently became aware of a case of TB in the local secondary school (Ysgol y Strade). Initially it was reasonably assumed that the school case must be related to the Llwynhendy outbreak, but the subsequent typing showed that the organism was unrelated. In retrospect, it may have been better at that point to hold a separate OCT for the school cluster because the school screening process continued to cause confusion when it was discussed alongside the Llwynhendy cases. There was also some concern that local resources may have been inadequate particularly regarding specialist nurses. At this juncture, Dr Carol Llewellyn-Jones agreed to take the lead role for the TB clinical service in Hywel Dda. There was now recognition that there was sustained transmission of TB in the community and further clinical cases with the Llwynhendy characteristic would continue to surface. It is of note that at this juncture, the services were dealing with six other cases/clusters of TB in Carmarthenshire.

At the time of the last OCT meeting in September 2015, a further two cases (one latent) with links to the public house had been identified but extensive contact tracing was deemed unnecessary because of the lack of close contacts. Although the Llwynhendy outbreak was not formally closed at this point, no further meetings occurred.

An interim, but not final, outbreak report for the first two phases was available to the panel. At that point, the outbreak included 19 cases of active disease though this number may have included some cases with

different typing that were not therefore related to the original index source case.

The Panel's view

In the second phase, public health management seemed to have improved with clearer actions, leadership and a recognition that the original contact tracing in phase 1 may well have been inadequate. It also became clear that there was continuing multi-source transmission of TB in Carmarthenshire with an organism that had allegedly spread into the area from England along the M4 corridor. Other cases and clusters with different strains were also occurring simultaneously in West Wales. The possibility that a community screening response would be required in future was considered at that point because the contemporary school outbreak in Llanelli may have been linked. This should, in retrospect, have been dealt with as a separate outbreak team. However, until the organism's strain was identified as different, the team were correct to assume that a link to Llwynhendy was highly likely. Cases with links to the pub were still presenting so it is not clear why the OCT meetings were discontinued in September 2015.

Phase 3 (November 2017- April 18)

The outbreak team was recalled for a further two meetings due to the occurrence of a new case with links to the public house via their parents both of whom had previously had TB. The case was further complicated because they had worked in a care home whilst symptomatic. The case had screened negative by tuberculin skin test three years earlier. TB screening was completed for the family and care home staff and residents. Wider screening was also considered but not pursued at this stage. No evidence of ongoing transmission was discovered so this was not pursued but GPs in the area were alerted and reminded to be vigilant.

The Panel's view

The response to the new case was handled correctly and documentation was clear. The ongoing risk of future cases was recognised and surveillance continued.

Phase 4 (November 2018- present)

The outbreak team was recalled in November 2018 because of three deaths associated with infection by the outbreak strain. One case, with no obvious direct link to the public house in Llwynhendy was a person with no significant prior illness but who died suddenly with sepsis without having started treatment for known pulmonary TB. The two other deaths in the area were people on treatment for TB but both had serious underlying disease (cardiac failure and lung cancer). In those two cases, TB was not listed on the death certificate as the primary cause of death. At this juncture 24 active cases were considered to be part of the outbreak centred on the public house. Three further cases with the same MIRU-VNTR typing but with no epidemiological link were not considered to be part of the outbreak. Five of the 24 cases were thought be responsible for onward transmission. A review of the outbreak resulted in the conclusion that the high level of onward transmission and prevalence of latent TB now justified widespread community screening which was subsequently commissioned. It was also agreed that the age cut off for treatment for latent TB be extended from 35yrs to 65yrs in line with the recently amended NICE guidelines. The last OCT meeting minutes to which we had access was in February 2022 at which the outbreak was summarised but not formally declared over. We understand that a further OCT meeting took place in September 2022.

The Panel's view

Outbreak control meetings in phases three and four were chaired by an experienced public health consultant. The documentation was now clear, with proposed actions defined and followed up in subsequent meetings. The contact tracing of active cases was thorough. The decision making and policy changes are all appropriate and the move towards community

screening was timely and correct both to assess the extent of the community risk and in order to allay public anxiety.

Community Screening

The OCT correctly took the view that to settle the concerns and to identify the extent of infection in the community, a population screening programme was necessary. This work was outsourced to an organisation called Find and Trace supported by Oxford Immunotec who were responsible for the phlebotomy and IGRA testing. The screened population included those who had not attended for previous contact tracing or had done so prior to the 2016 NICE guidance change. In addition, anyone with a link to a local public house in Llwynhendy between 2005 and 2018 was invited along together with anyone, not previously identified, who believed that they had had contact with someone with TB prior to their treatment.

Two community screening sessions were held, one in June and one in September 2019 in convenient settings. In the first session 1188 people had IGRA testing with 76 positive results (6.4%). At the second session 772 people were tested and 128 (16.6 %) were positive for latent TB. The majority (94%) of those screened were born in the UK. The prevalence of latent TB in both cohorts was substantially higher than the UK average. The strongest factor associated with a positive IGRA was frequenting a local public house in Llwynhendy in the period 2009-10. The difference between the positivity rates in the two screening sessions can be explained by the fact that more targeted invitations to come forward were issued in the second phase.

Approximately 300 identified contacts who did not come forward for the community sessions continue to be invited to the TB service clinics. It is not known how many of these remain to be assessed but we are assured that the catch up is on-going.

Clinical TB Service in Hywel Dda

At the beginning of the outbreak there was no formal or co-ordinated clinical TB service in Hywel Dda. Cases will have been dealt with as they presented by members of the respiratory team of consultants. At the time there was a lot of instability in the medical manpower due to organisational change and to the inability to recruit to permanent consultant posts. Contact tracing was undertaken by a general respiratory nurse though at the onset of the outbreak in Llwynhendy, nurses from Public Health Wales were drafted in to assist.

As a consequence of the outbreak, a funded session was established in 2014 with the appointment of Dr Llewellyn Jones as the lead physician for TB, assisted by her general respiratory nurse and based in Carmarthen. Clinics were held approximately every two weeks according to demand but less frequently if the consultant was on leave. In case of urgency, patients may also have been referred though the lung cancer pathway or via A&E and then referred on to the clinic after diagnosis. In 2019, further funding was found to appoint Kelly Goddard as the first dedicated TB nurse. At all times, contact tracing and home visiting has also been supported by PHW nurses. Dr Llewellyn Jones has now retired and her duties have been taken over by Dr Gareth Collier who continues with the same model of service.

Panel's view

There has been a significant improvement in the care of patients with TB and their contacts since the appointment of Dr Llewellyn Jones as lead clinician. She has developed the service and dealt with several outbreaks as well as Llwynhendy and continued to mop up the residual contacts from the community screening programme. There remain some resource issues which continue to hamper the team. One problem is the lack of annual leave cover which leaves the TB service exposed when the consultant or nurse is on leave. This can lead to a delay in starting treatment. Other shortfalls include the lack of formal administrative assistance, sufficient pharmacy support to allow DOT/VOT supervision and phlebotomy. We

understand that the latter has now been addressed by the appointment of a phlebotomist. Adequate and dedicated administrative support will also help to ensure an efficient service and take some pressure off the team.

Although the incidence of active TB in Hywel Dda is low, the workload is still significant by virtue of the ongoing contact tracing and supervision of treatment for latent TB. There are in addition, developing issues over refugee and immigrant populations as well as the emergence of drug resistance and non-tuberculous mycobacterial disease (NTM).

Review of the clinical cases

The panel were able to review the clinical records of 26 from a total 37 patients. Some notes were not available because patients were deceased with records destroyed or were resident outside Hywel Dda. All the cases we reviewed had pulmonary tuberculosis, eleven of whom had a positive smear and were therefore contagious. The duration of symptoms ranged from one week to seven months with a median of 133 days (the median delay in presentation in England is 79 days). In this instance, the highly infectious index case had symptoms for seven months prior to diagnosis. Once diagnosed, we found that appropriate treatment was generally prompt and completed. Eight of the outbreak cases had TB listed as a cause or association with death. Of the records the Panel were able to examine, the majority had TB as an incidental feature and had primarily died from other serious illness including cancer, cardiac disease, alcoholic cirrhosis and co-morbidity associated with immunosuppression. Only in one case was it clear that TB was the primary cause of death but in this instance, although diagnosis was relatively prompt, treatment was delayed by a short period. During this time, there was a temporary suspension of the TB service due to lack of annual leave cover. The subsequent clinical course for this patient, deteriorated surprisingly rapidly and may have been complicated by additional sepsis.

Clinical guidelines

There are no specific Welsh TB clinical guidelines for TB and recent NICE guidelines are not formally endorsed in Wales. In the absence of country-specific documents, the common practice has been to follow the BTS and subsequent NICE guidelines. There are repeated references in the minutes of the OCT meetings to the need for adherence to the contemporary versions of these guidelines. This is particularly relevant to management of latent TB where advice changed in 2016 to offer preventative treatment not only to those under 35 years but also to the 35-65 age group. The panel was persuaded that clinicians in Wales adopted the same guidelines as the rest of the United Kingdom.

Health Board and Public Health Wales interaction

The responsibility for the management of an outbreak of infectious disease lies initially with the Health Board and the local Director of Public Health. Public Health Wales provides oversight and practical support where necessary. These obligations are set out in the statutory establishment orders for both organisations from 2009. The first outbreak control policy from PHW was published in 2011 and the latest update in 2022. These policies are largely generic but do cover food and water-borne outbreaks in more detail. There is a PHW standard operating policy for TB case management published in 2017 but this does not cover OCT conduct. In early part of the outbreak, expert representatives from PHW were members of the initial outbreak control team but it appears as though their presence was not sustained through the later meetings of phase 1 and may not have contributed to all the decisions made. It appears that no senior representative from PHW or the local director of public health at the time were present for the final two meetings of Phase 1. Obviously, it is possible that communication was going on in the background by email or by other means. PHW nurses were helpfully deployed on the ground to help with contact tracing. In the later phases, the outbreak team was chaired by an

experienced PHW consultant (Dr Brendon Mason) and this was reflected in a substantial improvement in the management of the outbreak.

The Panel was puzzled by the absence of any reference to the outbreak in minutes of the meetings of either HDUHB or PHW Board until 2019. It appears that it was not until press interest in the fatality in 2018 and the community screening programme and a written complaint to PHW the following year that the outbreak was formally discussed at board level. It is possible that some discussion did take place within the executive team. The subsequent board discussion included the offer of some resource to HDUHB for the community screening. PHW were dealing with at least two other TB outbreaks and the beginning of the COVID pandemic at the time. The HDUHB Board minutes in January 2020 outlined the steps to be taken to contain the Llwynhendy outbreak. This included continuation of the screening offer, especially to children, the treatment of latent TB cases and an offer of BCG immunisation to those who tested negative if under 35 years of age.

PHW Internal reviews

Stimulated by a formal complaint to PHW about the failure to control the outbreak, an internal review was undertaken. This took the form of a brief examination of the relevant documents by the medical director and by an experienced non-executive director. This internal review was followed by two de-briefing sessions to audit the performance of PHW in the outbreak. The internal review identified failings in the initial public health response and raised questions about the interaction between PHW and the Health Board. In addition, there was some uncertainty about the involvement, or otherwise of Welsh Government in the process and the lack of a structured system to specifically manage outbreaks of TB disease and infection.

The de-brief sessions resulted in a number of practical recommendations to be taken forward, though the Panel wondered if any of these have been implemented. Many of these recommendations are endorsed by this Panel.

This internal review did not address the wider national issues about control of TB, for example by National Cohort Review or a National Plan for Wales.

Other reviews

The panel were grateful to Dr Brendon Mason who not only chaired the later phases of the OCT but also compiled several analyses of the outbreak. These included the epidemiology, the transmission risk and an investigation of the associated deaths. The analysis was particularly helpful in identifying the initial high risk of transmission from the index case (70% of close contacts and 20% of social contacts that were screened). This confirms the associated environment and the sputum smear status of the index case as a "super spreader" risk. This conclusion might have been reached much earlier in the outbreak.

The National Picture

Historically, respiratory disease has always been prominent in the experience of the people of Wales. The legacy of tuberculosis, miners lung disease and the association of respiratory disease with poverty has left a lasting impression. The Welsh Government has supported a Respiratory Health Delivery Plan since 2018. This includes a section on the better management of TB because although the rates of infection are lower in Wales, it appears as if the mortality rate is higher than elsewhere in the UK. The Delivery Plan has expanded the National Cohort Review Programme which has been running on an unofficial basis since 2012. The cohort review offers consensus on all cases derived from the UK enhanced surveillance system (ETS) and meets quarterly. It can also offer advice on dealing with drug resistance, new immigrant screening and management of difficult cases. The scheme now has representation from medical and nursing staff in all health boards, though not all have funded formal sessions for TB. HDUHB has been contributing to the cohort review since Dr Llewellyn Jones assumed her role in 2015.

One other product of the Delivery Plan has been a proposal for a Welsh National Plan for Tuberculosis, including a new policy for migrants. The

proposal, "Tuberculosis Strategy and Service Specification for Wales 2021-2026" was written by Dr Gwen Lowe (a PHW employee) on behalf of the Delivery Group. This document was submitted to the Welsh Government for consideration more than 12 months ago, but so far, no formal response has been received. In contrast, the NHS in England has had a formal collaborative (NHSE and UKHSA) strategy for the control of tuberculosis in place since 2015.

8. Conclusions

The outbreak of human tuberculosis, which was first identified in Llwynhendy in 2010, continues to cause concern now, more than a decade later. The relevant strain of MTB is not unique to the outbreak which was centred on a public house but has also been recorded elsewhere in the UK. The index case in the outbreak had suffered prolonged symptoms before diagnosis and was highly infectious in a social environment that would predictably have led to high levels of transmission. As a result, there have been at least 31(30 individuals) cases of active pulmonary TB and at least 300 cases of latent TB infection. Retrospective review of the available samples with culture and WGS typing identified 18 proven cases over the duration of the outbreak. Over the years, the outbreak response has resulted in the tracing of 663 individual contacts and a community screening programme, which tested 1950 people. The latter exercise demonstrated a surprisingly high level of TB infection in the local population (average 11%) which was highest in people who had historical contact with the public house in Llwynhendy or the index case. Although we cannot be certain that the high level of TB infection in the community is all related to the outbreak, it does suggest that there is a high risk of community outbreak in the future.

The pattern of TB in West Wales is different from the usual pattern seen in the UK. The cases that the panel have examined are predominantly UK born

people all of whom had pulmonary disease. This differs from the common presentation in urban Britain where most cases occur in the non-UK-born and about half of whom have TB outside the lungs. This difference in demography in West Wales may result in delays in diagnosis and therefore in increased transmission of disease until there is a higher level of medical and public awareness.

TB Background

Wales has low rates of TB that are generally confined to urban areas but despite the low incidence, the death rates are twice as high as England. The national rate of TB is falling but no figures are available beyond 2018. The incidence of active TB in Hywel Dda is very low but has continued to fluctuate. As explained above, the cases do not fit the same pattern as seen elsewhere in the UK. Continued vigilance is therefore required by health professionals and the public to guard against future outbreaks. We noted a reluctance amongst some contacts in the population caught up in the outbreak to co-operate with the contact tracing process.

Medical services environment at the onset of the outbreak

At the time of the outbreak the medical services were in flux during a period of service mergers and hospital re-arrangements. The respiratory service was struggling with consultant vacancies requiring locums to plug the gaps. In addition, there was no designated TB lead consultant or dedicated TB nurse to run a disease specific service.

Initial outbreak management

The initial outbreak management was inadequate. The cluster of cases was picked up promptly by microbiology and the first OTC meeting was timely but later meetings were held infrequently and seemed to lack a sense of urgency. The record keeping was poor and unstructured. The membership of the OCT was inconsistent and it appears as if the additional representation from PHW and the local DPH drifted away leaving the OCT short of experienced advice. It was clear quite early on that the index case was highly infectious yet contact tracing was limited to family and close

social contacts. The physical environment of the pub was highly conducive to respiratory transmission, but this appears to have been unexplored. There was a failure to understand the role of social interactions between customers in the public house in Llwynhendy and other public houses as well as a possible role of the travelling darts team in wider dissemination of TB disease and infection. The outbreak control team was terminated prematurely perhaps failing to appreciate the super spreader nature of the outbreak. There was also a failure to appreciate that a much wider contact tracing net was required amongst non-household contacts. It is possible that a contact tracing team more familiar with local behaviour patterns may have acted differently.

The appearance of further cases initiated a second phase of outbreak control meetings and the performance and record keeping improved. However, the OCT was complicated by the simultaneous and ultimately unrelated school outbreak. This may have resulted in a loss of focus on the original problem. There was recognition that further cases were likely to arise but, inexplicably, the meetings petered out without any arrangement either to continue or to close the outbreak.

The outbreak team was recalled when a further case led to a fatality. From that point on, the OCT meetings of phases 3 and 4 had adequate senior leadership and representation. It was realised eventually that a community screening exercise was required to explore the extent of the outbreak and to bring it under control.

Clinical case management

As previously mentioned, in Hywel Dda there was no formal TB service until 2014 and no dedicated TB nurse until 2019. The situation has now improved significantly with the leadership of Dr Llewellyn Jones and her successor, Dr Gareth Collier. Prior to her appointment, the cases were treated by a variety of respiratory consultants though as far as we can tell, the treatment was adequate and timely, once the diagnosis had been made.

There is concern that cases do still go unrecognised in the community because of the underlying lack of awareness amongst primary care staff and the public.

It was clear from our inspection of the records that there was a high level of co-morbid illness amongst people who developed TB. This may reflect the underlying health inequalities in the community. The people who died with a current or prior diagnosis of TB with one exception, had serious underlying illnesses that were the primary cause of death. In the one fatal case where TB was the primary cause of death, there were factors leading to a short delay of treatment.

Systemic factors

It was clear that HDUHB was responsible via the Director of Public Health for the initial management of the outbreak and delegated to the CCDC. The role of PHW was to provide oversight, expertise and additional resource when required. The first response to the outbreak was flawed and the responsibilities did not seem clearly defined. From the third phase, PHW seemed to have a stronger influence on events. Neither Board appeared to have knowledge of the outbreak until 2019. The internal reviews commissioned by PHW came to similar conclusions to this panel but could have done so earlier with heightened awareness from the beginning. In addition, we would have expected PHW to take a lead role in determining protocols and national policy for TB along the lines of the Health Security Agency in England. Instead, this seems to have been left to the specialty-led Delivery Group who have run the cohort review and proposed a national plan. PHW has had some involvement in the latter.

9. Recommendations

(1) The outbreak has not yet concluded and the high level of latent TB infection in the population implies further risk. This risk is heightened because the active disease in this population is

predominantly pulmonary and therefore more infectious. Although the level of active TB infection is low in West Wales, delayed presentation in unrecognised cases may lead to further outbreaks and deaths. The level of awareness amongst the public and their health care professionals must be therefore increased and maintained. This also applies to trainee health professionals.

(2) Any future outbreaks should be overseen by PHW from the outset with a TB -specific standard operating procedure for the conduct and recording of outbreak management. The current SOP and OCT policy needs to be updated in this respect. The latter needs to be developed alongside modern data analysis and WGS typing so that outbreaks are identified and contained. Comprehensive contact networks of all cases should be recorded electronically and plotted with social network analyses undertaken to ensure links between cases are uncovered quickly and easily.

(3) Funding should be identifiable ahead of time for outbreaks of infectious diseases so that such outbreaks can be managed in a timely and effective manner without the need for time-wasting discussion.

(4) The local TB service has improved but still has inadequacies. In particular, cross-cover arrangements need to be in place for annual, sick and study leave in order to prevent delays in treatment. Pharmacy and administrative support needs improvement. Succession planning for the TB Specialist Nurse also needs to be clear.

(5) At a national level, the Cohort Review Programme needs to be supported with adequate funding for each contributing health board.

(6) Welsh Government should support both the Cohort Review Programme and the proposal for a National Service Specification that includes the development of a TB pathway to tackle delayed diagnosis (e.g. investigating cough lasting longer than three weeks).

(7) Wales does not seem to be properly prepared for the challenges of new migrants, refugees, and the occurrence of future drug resistance. These factors should be included in a future TB plan supported and funded by Welsh Government.

Panel membership

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HDUHB Board minutes

PHW Board minutes

HDUHB TB Operational Group minutes

Dr Brendon Mason's reports and analysis

PHW Internal Reports and De-briefs

Welsh Respiratory Delivery Group National Cohort Review reports

Proposal for a Tuberculosis Strategy and Service Specification for Wales 2021-2026

All Wales TB annual report 2019

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Dr Brendon Mason

Dr Carol Llewellyn Jones

Dr Gareth Collier

Professor Kier Lewis

Kelly Goddard

Dr Ian Campbell

Brendon Scott & Prof Al Story

Dr Simon Barry

Dr Quentin Sandifer

Dr Mark Temple

An External Review of the Llwynhendy Tuberculosis Outbreak

Terms of Reference

1. Scope

1.1 An outbreak of *M. tuberculosis* (TB) centred on the Llwynhendy electoral ward in Carmarthenshire, West Wales was first declared in November 2010. Since then an outbreak control team (OCT) has been convened and stood down three times. In November 2018 an OCT was reconvened for the fourth time. This is now delivering a staged approach to community screening, which is ongoing.

1.2 The Boards of Public Health Wales and Hywel Dda University Health Board wish to examine whether the outbreak has been managed optimally including whether contact tracing should have been extended at an earlier stage, and whether the clinical care provided to cases was optimal, and if these affected the extent and impact of the outbreak.

1.3 Public Health Wales and Hywel Dda University Health Board have agreed to jointly commission an independent external review to examine these questions as well as to identify the lessons learned from the response to this outbreak and to provide assurance of the current arrangements.

1.4 The review will cover the management of the outbreak from November 2010, when first declared, until the present time (August 2021), to identify the actions that have been taken in response to lessons identified.

2. Purpose

2.1 The purpose of the Review is to examine:

- Whether the management of the outbreak since 2010 overall, and at each stage, was conducted in accordance with best practice guidance in place at the time of each phase of the outbreak (with reference to national strategies, strategies in other parts of the UK, WHO guidance, plans, guidelines and organisational protocols and procedures);

- The effectiveness of the respective involvement of Public Health Wales and Hywel Dda University Health Board in the control of the outbreak and treatment of latent or active TB cases at each stage (including the current phase) including the people and financial resources provided by both organisations in response to the outbreak to prevent disease transmission and treat identified TB disease;

- The governance arrangements (including reporting and escalation) for informing Teams and Boards of the outbreak and providing assurance to the Boards of each organisation;

- A review of any reported cases of: 1. People identified over the course of the outbreak who have died where the death certificate identified that TB contributed to or caused the death, and 2. People that have developed active TB;

- The effectiveness of any policy(ies) relevant to TB disease prevention, treatment and control including the management of outbreaks applicable in Wales in each phase of the outbreak and the reporting arrangements within Wales since the outbreak was first declared in 2010;

- The effectiveness of external expert advice sought and obtained including liaison with other organisations, for example, Public Health England (and UK Health Security Agency from October 2021) or the British Thoracic Society.

2.2 The review should identify lessons learned and make recommendations to Public Health Wales and Hywel Dda University Health Board for improvement. There may also be recommendations for other key stakeholders.

3. Reporting and Accountability

3.1 The Executive Medical Director at Public Health Wales and the Executive Medical Director at Hywel Dda University Health Board will be the joint Executive sponsors of the review and are accountable to their Boards for the delivery of the Reviewers' report(s).

3.2 The priority of both organisations at the present time is to continue to manage the outbreak and not distract attention or divert resources from that objective.

3.3 The sponsors would like the review to proceed at pace and are therefore looking to receive an interim Reviewers' report(s) by the end of February 2022 (indicative) with the view to have a preliminary discussion with the Chairs of the Boards and Chief Executives of both organisations prior to a final report being submitted to and presented at the respective Boards no later than May 2022, with an expectation of a report to QSIAC by the end of March.

3.4 The Executive sponsors will prepare a joint SBAR for the respective Boards to support the review panel's final report.

3.5 The Reviewer(s) may wish to establish short duration task and finish groups on specific matters of enquiry as and when necessary, for example, a mortality review group and both organisations will give reasonable consideration to requests for any associated necessary resources.

3.6 The Review Project team will report regularly (monthly) on progress of the review to the Executive Sponsor and Executive Team in each organisation.

3.7 If, in the course of the Review, matters are identified that require immediate and urgent action on grounds of public health or quality and safety of clinical care, then these will be raised, in the first instance, with the Executive Sponsors of the Review to determine whether urgent actions are required.

4. Membership of the review team

4.1 The Reviewers are expected to include:

- A senior public health specialist with expertise in health protection including outbreak control and ideally with demonstrable knowledge of tuberculosis as a public health issue.
- A senior respiratory medicine specialist with expertise in tuberculosis disease.
- A respiratory nurse specialist with expertise in tuberculosis disease.
- A senior microbiologist with expertise in TB diagnosis and expertise in public health microbiology.
- Lay Member: An independent lay representative from a national organisation that has an interest in the treatment and control of tuberculosis and patient outcomes.

The review panel will be chaired by Professor Mike Morgan, previously NHS England's National Clinical Director for Respiratory Disease.

5. Resources to support the review

The commissioning organisations will agree a reasonable request from the reviewers for the resources, human and otherwise, needed to deliver the review. It is expected that this will include access to relevant premises and facilities to conduct necessary activities (meetings etc.); administrative support to assist document retrieval and management, arranging interviews, and the preparation of (a) report(s); retrieval and preparation of case records to support a mortality review; and project management to deliver the review.

A Project team will be established to support the review panel. The Project team will be led by a Project manager and will include administrative support, Communications and Information and Communications Technology. The Chair of the Review Panel will work closely with the Project Team to ensure adequate support to the review and review panel members.

6. Communications and publication of review findings

6.1 The review is undertaken as part of the legal duty of candour for Public Health Wales and Hywel Dda University Health Board and accordingly, the communication and dissemination of the findings will adopt an open and transparent approach.

6.2 A joint Communications Strategy will be agreed by both Public Health Wales and Hywel Dda University Health Board, that will define the end-to-end process from the initiation of the review to the publication of the findings.

6.3 The Communication Strategy will include consideration of the needs of key stakeholders, including members of the public, individuals and families directly affected, Welsh Government, Health Boards, Community Health Councils and Local Authorities.

6.4 A joint Communications Plan will include details on plans for publication, including indicative timelines for public meetings and meetings with those directly affected. Where required, earlier contact will be made with individuals and families affected.

ADRODDIAD ADOLYGIAD ALLANOL O'R BRIGIAD O ACHOSION O DWBERCWLOSIS YN LLWYNHENDY 2il RHAGFYR 2022

Comisiynwyd ar y cyd gan Iechyd Cyhoeddus Cymru a Bwrdd Iechyd Prifysgol Hywel Dda

Adolygydd Arweiniol – Yr Athro Mike Morgan

Cynnwys

Crynodeb Gweithredol

Nodwyd brigiad o achosion o dwbercwlosis (TB) yn gysylltiedig â thafarn yn Llwynhendy ym mis Medi 2010. Dros ddegawd yn ddiweddarach, mae achosion sydd â chysylltiad â'r brigiad hwn yn dal i ddod i'r amlwg. Amcangyfrifir bod o leiaf 31 achos o TB gweithredol ar yr ysgyfaint, ac efallai dros 300 o achosion o haint TB cudd yn gysylltiedig â'r brigiad. Gwelsom hefyd fod cyfradd uwch nag arfer o haint TB cudd yn y boblogaeth leol, nad yw wedi'i achosi gan y brigiad arbennig hwn o reidrwydd, ond a allai ddatblygu i fod yn ffynhonnell brigiadau yn y dyfodol. Y boblogaeth sydd mewn perygl yw pobl wedi eu geni yn y DU sy'n datblygu TB heintus iawn ar yr ysgyfaint a allai, oherwydd eu demograffeg anarferol, fynd heb ddiagnosis am fwy o amser nag arfer. O ganlyniad, hyd yn oed yn yr ardal hon lle mae nifer yr achosion o TB yn isel, mae posibilrwydd y gallai brigiadau eraill ddigwydd, ac mae angen cadw llygad ar y sefyllfa.

Canfuwyd mai ffynhonnell wreiddiol y brigiad oedd gweithiwr unigol mewn tafarn yn Llwynhendy. Oherwydd yr oedi cyn cael diagnosis o TB ar yr ysgyfaint, bu'n heintus iawn am gyfnod hir. Roedd y straen achosol o TB wedi ei weld o'r blaen yng Nghymru ac yn Lloegr, ac nid oedd yn unigryw i'r brigiad hwn. Ni wyddom sut y daliodd yr achos cyfeirio hwn yr haint, ond mae dadansoddiad genetig dilynol yn cyfeirio at ddefnyddiwr tafarn a oedd wedi'i effeithio yn 2007. Ar ôl y diagnosis o'r achos cyntaf, roedd yr ymateb iechyd y cyhoedd yn cynnwys sefydlu tîm rheoli brigiad a defnyddio staff olrhain cysylltiadau i nodi achosion o drosglwyddo'r haint. Ymddengys bod yr ymateb cychwynnol hwn yn annigonol, yn bennaf gan na sylweddolwyd pa mor heintus oedd y ffynhonnell ac, oherwydd hynny, na chafodd y trefniadau olrhain cysylltiadau eu hymestyn yn ddigonol. O ganlyniad, roedd pobl heintus nad oeddent wedi cael eu hadnabod yn datblygu clefyd gweithredol, ac yn pasio'r haint ymlaen i eraill. Cafodd y tîm rheoli brigiad ei ddirwyn i ben yn rhy gynnar a bu'n rhaid ei ailagor ar dri achlysur arall wrth i fwy o achosion amlygu eu hunain, gan gynnwys un achos angheuol y rhoddwyd sylw iddo yn y cyfryngau. Gwellodd y trefniadau rheoli iechyd

y cyhoedd yn sylweddol ar ôl hyn, gan orffen â sgrinio cymunedol ar raddfa fawr a ddatgelodd lefel uchel o haint TB cudd yn y boblogaeth.

Roedd rheolaeth glinigol cleifion unigol â TB ar ddechrau'r brigiad yn foddhaol, ond gan nad oedd gwasanaeth TB pwrpasol a chlinigydd arweiniol nid oedd y gwaith yn cael ei gydgysylltu. Yn ychwanegol at hyn, roedd y ddarpariaeth gofal iechyd anadlol leol yn annigonol ar y dechrau oherwydd anawsterau recriwtio, ac oherwydd bod y gwasanaeth yn cael ei ad-drefnu. Mae hyn wedi cael ei ddatrys i raddau helaeth trwy benodi ymgynghorydd arweiniol a nyrs TB benodedig. Er hyn, mae angen newidiadau o hyd er mwyn gwella'r gwasanaeth TB.

Roedd angen craffu hefyd ar y berthynas rhwng y Bwrdd Iechyd (BIP Hywel Dda) ac Iechyd Cyhoeddus Cymru. Er bod y cyfrifoldeb statudol am reoli'r brigiad yn nwylo'r Bwrdd Iechyd, dylai fod wedi cael mwy o oruchwyliaeth gan Iechyd Cyhoeddus Cymru ar y dechrau. Barnwyd bod yr ymateb cychwynnol yn annigonol, ac nid oedd cyfeiriad at y brigiad yng nghofnodion byrddau'r naill sefydliad na'r llall tan 2019, er ei bod yn bosibl bod trafodaethau ar lefel is. Erbyn hyn roedd o leiaf un person wedi marw, roedd sgrinio cymunedol eang ar waith ac roedd cryn bryder ymhlith y cyhoedd. Argymhellodd yr adolygiad mewnol gan Iechyd Cyhoeddus Cymru yn 2019 y dylid cyflwyno dull mwy strwythuredig o fynd i'r afael â brigiadau o achosion o TB, ond nid yw hyn wedi digwydd eto.

Mae strategaeth gydweithredol ar gyfer TB yn Lloegr er 2015, ac mae'n canolbwyntio ar reoli'r clefyd a phrofi mudwyr. Er bod cyfraddau TB yng Nghymru yn is na Lloegr, mae'r gyfradd farwolaethau ddwywaith cymaint. Nid oes gan Gymru strategaeth genedlaethol ar gyfer TB er bod Grŵp Cyflawni Anadlol Cymru wedi cynnig un. Nid yw'r strategaeth wedi cael ei chefnogi'n ffurfiol gan Lywodraeth Cymru eto. Mae Adolygiad Cohort TB anffurfiol yn cael ei drefnu gan y Grŵp Cyflawni Anadlol, a dylai hefyd gael ei roi ar sail ffurfiol fel rhan o Strategaeth TB Genedlaethol.

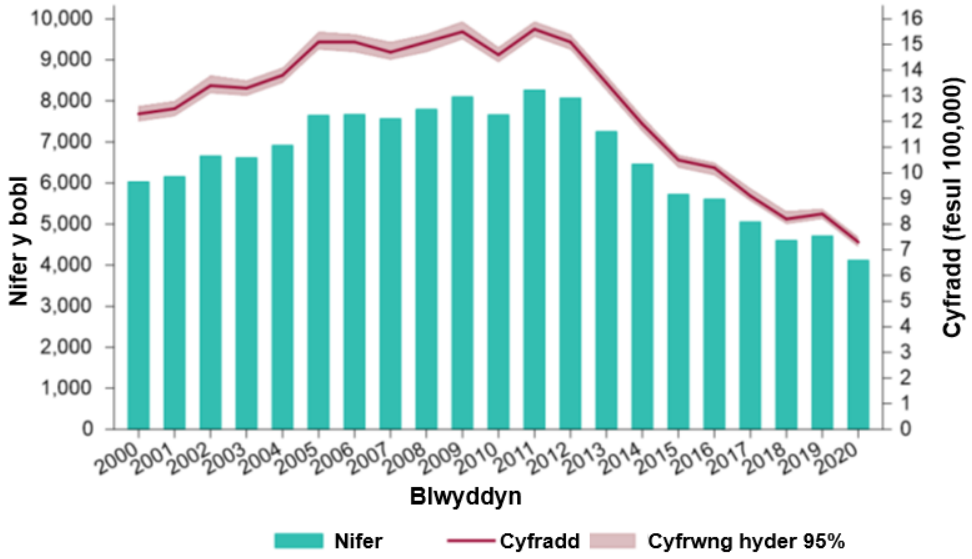
1. Cyflwyniad

Mae twbercwlosis (TB) yn broblem o hyd mewn gwledydd datblygedig ac mewn gwledydd datblygol. Er bod triniaeth effeithiol ar gael, roedd yn gyfrifol am 1.5 miliwn o farwolaethau yn fyd-eang yn 2020, ac mae'n dal yn un o flaenoriaethau Sefydliad Iechyd y Byd. Yn y Deyrnas Unedig (DU) mae tua 350 o farwolaethau ataliadwy bob blwyddyn yn gysylltiedig â TB. Mae nifer yr achosion newydd o TB wedi gostwng yn raddol yn y DU, yn bennaf oherwydd mesurau iechyd y cyhoedd, cynnydd mewn cyfoeth a thriniaeth effeithiol. Er hyn, nid yw TB wedi'i ddileu'n llwyr, a thros y blynyddoedd mae llacio goruchwyliaeth iechyd y cyhoedd yn aml wedi arwain at achosion newydd. Ar hyn o bryd, mae'r rhan fwyaf o'r achosion o TB yn y DU yn codi yn y boblogaeth drefol, ac mae 76% o'r rhain yn bobl wedi'u geni dramor (UK HSA 2021). Gan amlaf, mae'n bosibl trin TB ar ôl cael diagnosis, ond mae pryder cynyddol ynglŷn ag ymwrthedd i gyffuriau. Yn y cyd-destun hwn yr adolygir y brigiad o achosion o TB yn Llwynhendy yn 2010.

2. Twbercwlosis yn y Deyrnas Unedig

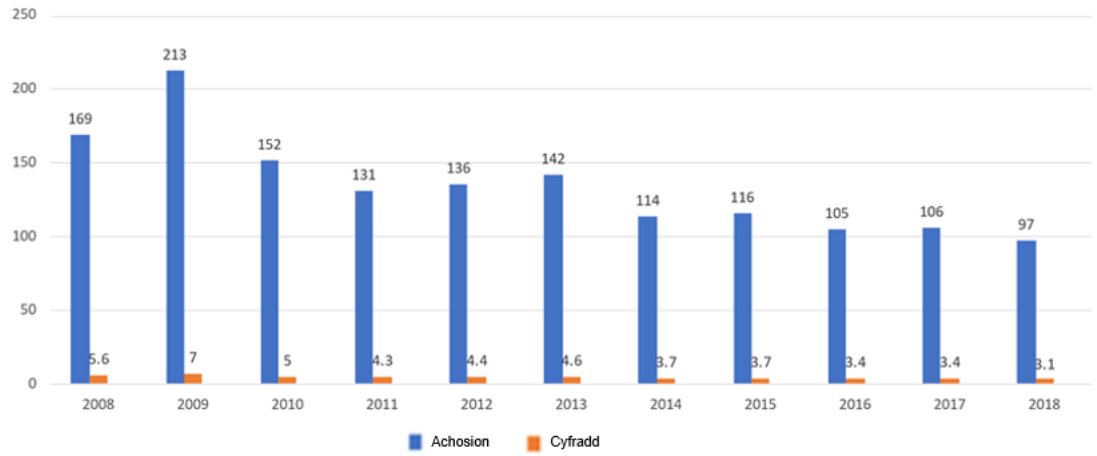
Yn Lloegr, lle mae'r ffigurau ar gael, mae nifer yr achosion newydd o TB wedi gostwng yn sylweddol ers dechrau'r 20^{fed} ganrif, a gwelwyd gostyngiad pellach ar ôl cyflwyno therapi gwrth-TB. Erbyn dechrau'r 21^{ain} ganrif roedd y niferoedd wedi sefydlogi, ond yna dechreuasant godi eto, ac yn 2011 roedd 8280 o achosion (Ffig 1). Lansiwyd y Strategaeth Twbercwlosis Gydweithredol (Public Health England ac NHSE) ar gyfer Lloegr yn 2015. Roedd y strategaeth yn nodi y dylid canolbwyntio ar ddiagnosteg, TB ag ymwrthedd i gyffuriau, poblogaethau y mae llai o wasanaethau ar gael iddynt, sgrinio mudwyr am haint TB cudd, y gweithlu a BCG. Yn ystod y degawd dilynol hanerodd nifer yr achosion newydd o TB, ond mae'n ymddangos bod y gwelliant hwn wedi dod i ben ac mae nifer yr achosion wedi cynyddu ychydig yn dilyn pandemig COVID. Mae Sefydliad

Iechyd y Byd yn gweld y DU fel gwlad lle mae nifer yr achosion yn isel. Er hyn, yn Lloegr yn 2020 roedd 1091 o achosion o TB mewn unigolion wedi'u geni yn y DU, ac roedd gan y rhan fwyaf ohonynt (68%) glefyd ar yr ysgyfaint. Mae'n dilyn bod pobl sydd wedi'u geni yn y DU yn debygol o fod yn fwy heintus oherwydd bod nifer yr achosion newydd o TB ar yr ysgyfaint yn eu plith yn uwch.



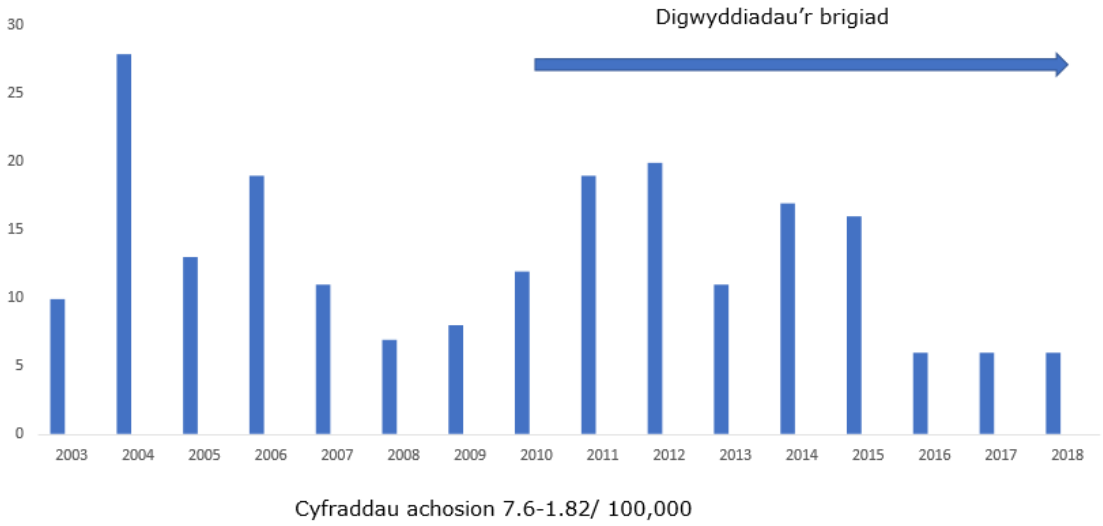
Ffigur 1. Achosion a chyfraddau TB yn Lloegr (2000-2020)

Fel gweddill y DU, mae patrwm y clefyd yng Nghymru i'w weld yn bennaf mewn cytrefi, ymhlith pobl nad ydynt wedi'u geni yn y DU, ac mae'n gyfuniad o glefyd ar yr ysgyfaint ac ar rannau eraill o'r corff. Mae'r adroddiad diweddaraf ar TB yng Nghymru, a gyhoeddwyd yn 2019, yn cofnodi gostyngiad graddol yn nifer yr achosion newydd, ac mae nifer yr achosion ar gyfer Cymru gyfan bellach o gwmpas 100 y flwyddyn (Ffig 2).



Ffigur 2. Achosion a chyfraddau TB yng Nghymru 2008-2018

Mae cyfraddau achosion o TB yn isel iawn yn ardal Hywel Dda o'u cymharu â rhannau eraill o Gymru a Lloegr, ond ni ellir eu hanwybyddu (Ffig 3). Gwelwyd brigiadau yn 2004, 2006, 2012 a 2014.

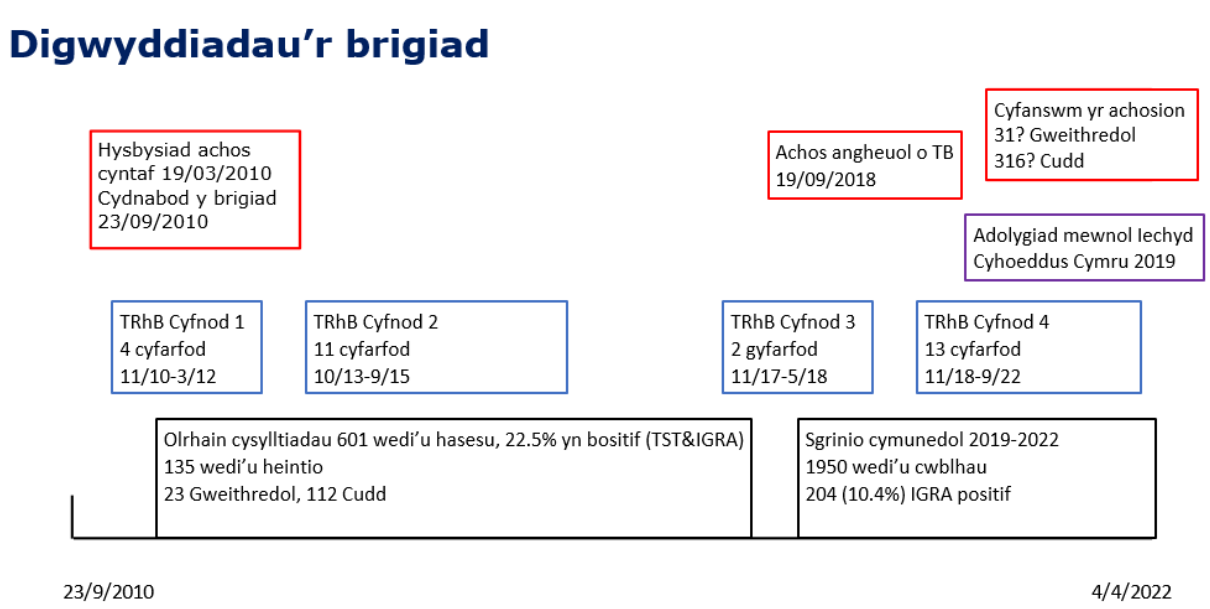


Ffigur 3. Hywel Dda (Pob 384,000. Nifer yr achosion o TB 2003-2018)

3. Y Brigiad o Achosion yn Llwynhendy

Rhoddwyd gwybod am achos cyntaf y brigiad ym mis Mawrth 2010. Nodwyd dau achos arall yn dilyn hynny, ac ym mis Medi 2010 amheuwyd bod brigiad o achosion. Cadarnhawyd hynny yng nghyfarfod y tîm rheoli brigiad ar 11 Hydref 2010. Credid mai ffynhonnell y brigiad (yr achos cyfeirio) oedd gweithiwr unigol mewn tafarn yn Llwynhendy, ond nid oes sicrwydd hyd yma sut y daliodd yr unigolyn hwn yr haint. Roedd achos â math tebyg o organeb TB wedi digwydd mewn man arall yn Sir Gaerfyrddin yn 2005, ond ni wyddys am unrhyw gysylltiadau â'r achos cyfeirio. Mae'n bosibl bod gan achos arall yn 2007 a ganfuwyd yn ddiweddarach trwy ddilyniannu genom cyfan (WGS) gysylltiadau â'r dafarn. Ni wyddom faint yn union o bobl a gafodd eu heffeithio gan y brigiad yn Llwynhendy, ond mae'n bosibl bod o leiaf 31 achos o glefyd gweithredol. Mae dryswch ynglŷn â'r union nifer wedi codi gan nad oedd meithriniad ar gael mewn rhai achosion i gadarnhau'r straen, ac oherwydd bod y dull o gyfri'r achosion trwy gydol y brigiad yn anghyson, ac weithiau'n cynnwys yr achos yn 2005 y barnwyd yn ddiweddarach nad oedd yn gysylltiedig â'r brigiad yn Llwynhendy. Roedd achosion o TB y gwyddys bod ganddynt gysylltiadau â thafarn leol yn Llwynhendy yn dal i gael eu nodi hyd at fis Gorffennaf 2020 ar gyfer achosion gweithredol a mis Ebrill 2022 ar gyfer yr achos cudd olaf. Nid yw'r adolygiad wedi ystyried achosion a allai fod wedi dod i'r golwg er mis Mawrth 2022 pan ddechreuwyd yr adolygiad. Roedd lledaeniad daearyddol yr achosion a oedd yn gysylltiedig â'r brigiad yn lleol gan mwyaf, ond roedd rhai achosion yn ymestyn i Fae Abertawe a thu hwnt.

Goruchwyliwyd yr ymateb i'r brigiad gan dîm rheoli brigiad a oedd yn cynnwys staff clinigol a staff iechyd y cyhoedd. Agorwyd a chaewyd yr ymchwiliad i'r brigiad dair gwaith, gan arwain at bedwar cyfnod o gyfarfodydd tîm rhwng 2010 a 2022 (Ffig 4 isod).



4. Diffiniadau o achosion a theipio microbiolegol

Nid oes diffiniad pendant o "frigiad", ond cymerir ei fod yn golygu mwy na dau achos â chysylltiadau epidemiolegol a microbiolegol â ffynhonnell ar wahân. Yn yr achos hwn, ystyrid mai'r gweithiwr oedd yr achos cyfeirio, a byddai ei gysylltiadau yn gyfrifol am ledaeniad dilynol yr haint ac am ddwysáu'r brigiad. Er mwyn olrhain cwrs brigiad caiff y dystiolaeth epidemiolegol ei chysylltu â straen microbiolegol yr organeb heintio i gadarnhau mai'r un organeb sy'n cael ei throsglwyddo. Ar ddechrau'r brigiad enw'r dull adnabod microbiolegol a ddefnyddid oedd MIRU-VNTR, sy'n dechneg PCR ar gyfer genoteipio'r organeb. Yn yr achos hwn disgrifir y genoteip â rhif, sef 32333 2432515324, sy'n straen a oedd wedi'i ganfod yn flaenorol yng Ngorllewin Canolbarth Lloegr yn 2006, ond nad oedd o reidrwydd yn gysylltiedig â'r brigiad yng Nghymru.

Yn ystod brigiad Llwynhendy disodlwyd teipio MIRU-VNTR gan dechneg dilyniannu genom cyfan (WGS), techneg cydraniad uwch i gadarnhau bod dau straen o'r organeb achosol, Mycobacterium tuberculosis (MTB), yr un fath neu bron yr un fath. Erbyn hyn byddai WGS yn cael ei ystyried fel y safon aur ar gyfer adnabod y straen bacterol sy'n gysylltiedig â brigiad, a

dyma'r drefn arferol yng Nghymru bellach. Gwyddom erbyn hyn fod 18 o'r achosion yn y brigiad a oedd â meithriniadau positif wedi cael eu nodweddu ymhellach trwy WGS, ond nid oedd rhai o'r samplau cynharach yn addas ar gyfer dadansoddiad pellach.

5. Y sail resymegol dros adolygiad allanol

Mae'r brigiad o achosion o TB yn Llwynhendy wedi parhau am fwy na degawd, ac mae achosion yn dal i ddod i'r amlwg. Ar ben hyn, mae'r angen i sgrinio'r boblogaeth wedi arwain at gyhoeddusrwydd lleol a chenedlaethol. Mae achos angheuol o TB hefyd wedi tynnu sylw at y brigiad. Yn 2019, cyflwynwyd cwyn ffurfiol i BIP Hywel Dda ac Iechyd Cyhoeddus Cymru ynglŷn â'r modd y rheolwyd y brigiad. Arweiniodd hyn at ymchwiliad mewnol ac ôl-drafodaeth. O ganlyniad, penderfynwyd cael adolygiad annibynnol o'r dull o reoli'r brigiad o'r adeg y cafodd ei adnabod yn y lle cyntaf hyd heddiw. Nodir pwrpas yr adolygiad yn y cylch gorchwyl (Atodiad 1). Dylai'r adolygiad nodi gwersi a ddysgwyd a gwneud argymhellion.

6. Sut y cynhaliwyd yr adolygiad

Rhestrir aelodau'r panel adolygu yn yr atodiad, ac maent yn cynnwys arbenigwyr clinigol ar TB, olrhain cysylltiadau, microbioleg ac iechyd y cyhoedd. Cynhaliwyd cyfarfodydd rhithwir dros gyfnod o chwe mis rhwng Mawrth a Medi 2022. Adolygwyd yr holl ddogfennau perthnasol a oedd ar gael (gweler yr Atodiad) yn ystod y cyfnod hwn. Yn ogystal, cyfwelwyd nifer o unigolion a oedd yn gysylltiedig â'r brigiad (gweler yr Atodiad) ond ni cheisiwyd cysylltu â'r rhai a oedd yn gysylltiedig ar y dechrau ond a oedd wedi ymddeol neu wedi gadael eu gwaith. Cynhaliwyd ymweliad safle ag Ysbyty'r Tywysog Philip, Llanelli, ar 3 Awst 2022 i edrych ar y cofnodion clinigol a oedd ar gael o bob achos a gafodd ei ddiagnosio â TB gweithredol a'u cysylltiadau. Darparwyd cefnogaeth weinyddol a sefydliadol gan BIP Hywel Dda ac Iechyd Cyhoeddus Cymru. Comisiynwyd yr adolygiad ar y

cyd gan Iechyd Cyhoeddus Cymru a BIP Hywel Dda, ond ni fu aelodau'r naill sefydliad na'r llall yn rhan o drafodaethau'r panel.

7. Canfyddiadau

Cafodd y brigiad ei adnabod am y tro cyntaf ym mis Medi 2010, pan nodwyd clwstwr o achosion tebyg o TB â chysylltiad â thafarn yn Llwynhendy. Yn dilyn hyn cafwyd dynodiad ffurfiol fel brigiad a chynhaliwyd cyfarfod cyntaf y tîm rheoli brigiad ar 9 Tachwedd 2010. Yn ystod y 12 mlynedd ddilynol, agorwyd a chaewyd yr ymchwiliad i reoli'r brigiad dair gwaith, gan arwain at bedwar cyfnod o'r brigiad i'w hystyried. Hyd yn hyn cynhaliwyd 30 cyfarfod rheoli brigiad. Ar gyfer pob cyfnod, yr agweddau i'w hystyried yw:

- Y diffiniad o'r achos a'r cyd-destun microbiolegol
- Yr ymateb iechyd y cyhoedd
- Yr ymateb sefydliadol
- Olrhain cysylltiadau
- Rheolaeth glinigol
- Cyfyngiadau adnoddau

Yr achos cyntaf yr ymddengys ei fod yn wirioneddol gysylltiedig â ffynhonnell y brigiad, sef y dafarn yn Llwynhendy, oedd menyw 71 oed a welwyd ym mis Chwefror 2010. Roedd ganddi symptomau ers tri mis a oedd yn nodweddiadol o TB ar yr ysgyfaint. Cadarnhawyd y diagnosis ar 19 Mawrth 2010. Cafodd dau achos arall â chysylltiadau â'r dafarn yn Llwynhendy eu diagnosio yng Ngorffennaf ac Awst 2010. Roedd y ddau achos hyn yn cyfeirio at symptomau a oedd yn dyddio o ddechrau'r flwyddyn. Dros y blynyddoedd, mae nifer yr achosion lleol newydd o TB yn yr ardal wedi amrywio, ond roedd achosion â chysylltiad hanesyddol â'r dafarn yn Llwynhendy yn dal i ymddangos. Nid oes sicrwydd ynglŷn â chyfanswm yr achosion sy'n gysylltiedig â'r brigiad gan nad oedd gan bob

un o'r achosion feithriniadau microbiolegol a allai gadarnhau cysylltiad â'r straen cyfeirio o MTB. Mae'n bosibl bod cynifer â 35 o achosion gweithredol yn gysylltiedig â'r brigiad, yn ychwanegol at y llu o bobl eraill, hysbys ac anhysbys, sy'n cario clefyd cudd.

Cyfnod 1 (Tachwedd 2010-Mawrth 2012)

Parhaodd y cyfnod cyntaf o fis Tachwedd 2010 tan fis Mawrth 2012 ac roedd yn cynnwys pedwar cyfarfod o'r tîm rheoli brigiad. Daeth i ben ar 28 Mawrth 2012 pan gaewyd y brigiad. Cynhaliwyd pedwar cyfarfod yn ystod y cyfnod hwn a nodwyd pawb a oedd yn bresennol yn y cyfarfodydd. Cadeiriwyd pob cyfarfod yn briodol gan yr ymgynghorydd lleol mewn rheoli clefydau trosglwyddadwy, a oedd yn gweithio i Iechyd Cyhoeddus Cymru, ac roedd cynrychiolaeth ychwanegol o Iechyd Cyhoeddus Cymru a BIP Hywel Dda.

Diffiniad o'r achos

Cytunwyd ar y diffiniad cychwynnol o'r achos fel achos o TB yn ardal Llwynhendy, â chysylltiadau â'r dafarn yn Llwynhendy neu unrhyw rai o'r achosion cyfredol. Roedd yr achosion hefyd wedi'u nodweddu â'r teip MIRU-VNTR (32333 2432515324). Mae'n bwysig nodi bod y straen hwn o organeb, ar y pryd, hefyd wedi'i nodi mewn 15 achos o TB yn y 5 mlynedd flaenorol yng Nghymru. Roedd pedwar o'r achosion hyn yn Sir Gaerfyrddin. Gwyddom erbyn hyn fod y teipiau MIRU-VNTR yn awgrymu brigiad, ond byddent yn cael eu hystyried yn llai dibynadwy na WGS a phellter SNP. Mae'n bosibl mewn gwirionedd nad oedd rhai o'r achosion cynnar, pan nad oedd techneg arall ar wahân i deipio MIRU ar gael, yn gysylltiedig. O ganlyniad, roedd y straen hwn, neu straen a oedd yn perthyn yn agos, wedi cael ei nodi yma ac acw yng Nghymru a Lloegr cyn brigiad Llwynhendy, ac nid oedd yn unigryw.

Olrhain cysylltiadau

Gwahoddwyd nifer o unigolion yr ystyrid bod risg uchel iddynt fod wedi'u heintio i gael eu sgrinio. Roedd hyn yn cynnwys aelodau o'r teulu, staff y bar a'r tîm dartiau teithiol a oedd â chysylltiad â thafarnau yn yr ardal.

Cynhaliwyd cyfarfod dilynol o'r tîm rheoli brigiad dri mis yn ddiweddarach, a disgrifiwyd canlyniadau 16 o bobl a oedd wedi cael eu sgrinio, gan nodi bod 5 o'r rhai a wahoddwyd heb ddod i gael eu sgrinio. Y tro hwn, roedd gan 3 o'r rhai a sgriniwyd dystiolaeth bositif o haint TB, ond ni chanfuwyd achosion gweithredol y tro hwn. Yn y cyfamser, cofnodwyd nifer o achosion eraill o TB yn yr ardal ehangach, ond ni chredid eu bod yn gysylltiedig â'r dafarn yn Llwynhendy. Cytunwyd y dylid tynnu sylw'r meddygon teulu at hyn a pharatowyd datganiad ar gyfer y cyfryngau.

Aeth mwy na chwe mis heibio cyn cyfarfod nesaf y tîm, pan gofnodwyd bod TB ar ragor o aelodau o deulu'r achos cyfeirio, rhai achosion cudd a rhai achosion gweithredol o TB. Nid oedd y sgwrs â meddygon teulu wedi'i chynnal bryd hyn, ac nid oedd y wasg wedi rhoi sylw i'r datganiad i'r cyfryngau. Argymhellwyd rhagor o sgrinio teuluoedd pediatrig estynedig, ond ni thybid bod angen sgrinio oedolion y tu allan i'r teulu y buwyd mewn cysylltiad â hwy.

Cynhaliwyd cyfarfod olaf y tîm rheoli brigiad yn y cyfnod hwn chwe mis yn ddiweddarach ym mis Mawrth 2012. Gan nad oedd achosion newydd, cymerwyd bod y brigiad wedi'i gau bryd hyn.

Barn y Panel

Nodwyd y brigiad yn fuan trwy oruchwyliaeth ficrobiolegol ar ôl diagnosio'r cleifion cychwynnol. Yn yr achos hwn, fel mewn brigiadau eraill, roedd gan gleifion unigol symptomau ers tro cyn cael diagnosis. Mae hyn o ganlyniad i ymwybyddiaeth wael o'r symptomau ymhlith y cyhoedd a gweithwyr gofal iechyd proffesiynol. Nid oedd gennym fynediad at gofnodion gofal sylfaenol i benderfynu ynglŷn â graddau'r diffyg ymwybyddiaeth hwn.

Cafodd y tîm rheoli brigiad ei sefydlu ar unwaith, roedd ei gyfansoddiad yn briodol ac roedd yn cael ei gadeirio gan uwch feddyg ymgynghorol iechyd y cyhoedd. Cynhaliwyd tri chyfarfod arall o'r tîm, ond roedd yr amlder (chwe mis rhwng cyfarfodydd) yn awgrymu nad oedd y tîm yn teimlo bod y brigiad yn debygol o fynd mor ddifrifol ag y gwnaeth. Roedd llai yn

bresennol yn y cyfarfodydd diweddarach, ac ymddengys bod y presenoldeb uwch ychwanegol o Iechyd Cyhoeddus Cymru wedi drifftio i ffwrdd.

Cofnod y Tîm Rheoli Brigiad

Roedd cofnodion pedwar cyfarfod y cyfnod cyntaf ar gael ar gyfer yr adolygiad. Mae adroddiad drafft ar y brigiad ar gael hefyd, ond methodd y panel â gweld adroddiad terfynol o'r cyfnod cyntaf. O'u cymharu â dogfennau'r cyfnodau dilynol, nid oedd y cofnodion yn nodi'r camau gweithredu arfaethedig yn glir, a phan oeddent yn cael eu hawgrymu, nid oeddent yn cael eu gweithredu. Mae'n anodd cadarnhau cyfanswm yr achosion gweithredol yn y brigiad yr adeg hon hefyd gan fod cleifion a oedd wedi eu heintio ag organebau o deip genetig tebyg, neu a oedd heb feithriniad, weithiau'n cael eu cynnwys yn y ffigurau.

Cofnod olrhain cysylltiadau

Llwyddasom i adolygu'r gwaith papur olrhain cysylltiadau ar gyfer oedolion ond nid ar gyfer achosion pediatrig. Yn y camau cychwynnol teimlid bod y dogfennu'n wael ac yn anghyson. Nid oedd dull gweithredu systematig ar gyfer y broses olrhain cysylltiadau ei hun ychwaith. Cafodd rhai cysylltiadau eu sgrinio yn rhy gynnar neu ar ôl gormod o oedi. Gall ymateb y system imiwnedd i MTB gymryd hyd at 6 wythnos i ddatblygu. Nid oedd y cysylltiadau a sgriniwyd yn gynnar ac a gafodd brawf negatif bob amser yn cael eu galw yn ôl i'w sgrinio eto ar ôl 6-8 wythnos. Yn ychwanegol at hyn, nid oedd neb yn mynd ar ôl pobl a oedd wedi'u nodi fel cysylltiadau risg uchel ond nad oedd wedi dod i gael eu sgrinio, gan gynnwys y tîm dartiau.

Trosolwg o Gyfnod 1

Roedd y Panel o'r farn y gallai'r dull cychwynnol o reoli'r brigiad o safbwynt iechyd y cyhoedd fod wedi bod yn well. Nid oedd trosolwg strategol cynhwysfawr ac roedd yn rhy hamddenol, ond mewn amgylchiadau eraill efallai y byddai wedi bod yn ddigonol pe na bai'r achos cyfeirio wedi bod mor heintus. Roedd yn amlwg o edrych yn ôl bod yr achos cyfeirio yn heintus iawn, fel y gwelir o'r gyfradd drosglwyddo uchel gychwynnol (18.6% yn gyffredinol). Roedd y broses olrhain cysylltiadau'n

canolbwyntio'n bennaf ar y teulu, yn hytrach na chwsmeriaid y dafarn. Mae'n bosibl hefyd bod ffactorau amgylcheddol perthnasol yn ymwneud ag awyru a thynnu aer yn y dafarn yn Llwynhendy, ond mae'n ymddangos na chawsant eu hymchwilio. Roedd y broses sgrinio cysylltiadau yn amlwg yn rhy gyfyngedig ac mae'n bosibl bod methiant i sylweddoli rhyngweithiadau cymdeithasol cwsmeriaid tafarn a fyddai'n ymweld â nifer o dafarnau eraill yn rheolaidd. Mae'n bosibl bod y ffaith nad aeth neb ar ôl y tîm dartiau hefyd wedi lleihau effeithiolrwydd y broses sgrinio. Roedd y gwasanaethau lleol ar y pryd hefyd dan straen oherwydd bod y gwasanaeth yn cael ei ad-drefnu. Roedd y gwasanaethau meddygol wedi'u hymestyn oherwydd prinder staff, â gweithwyr locwm mewn swyddi, a diffyg gwasanaeth TB diffiniedig neu glinigydd arweiniol. Byddai'r gwaith olrhain cysylltiadau wedi cael ei wneud gan nyrsys anadlol lleol, neu nyrsys Iechyd Cyhoeddus Cymru yn gweithio mewn tiriogaeth anghyfarwydd. Mae'n bosibl bod llawer mwy o weithgaredd olrhain cysylltiadau yn digwydd yn y cefndir, ond nid oes cofnod ohono. Mae'n amlwg hefyd bod diffyg ymwybyddiaeth yn y boblogaeth leol o'r salwch a'r angen i olrhain cysylltiadau. Efallai fod pobl yn gyndyn o ddod ymlaen oherwydd y stigma sy'n gysylltiedig â TB, neu efallai oherwydd rhesymau eraill nad ydynt wedi'u harchwilio. Beth bynnag oedd y ffactorau cysylltiedig, methodd y dulliau rheoli cychwynnol â rheoli'r brigiad ac roedd achosion â chysylltiadau â'r dafarn yn dal i ddangos clefyd gweithredol dros ddegawd yn ddiweddarach.

Cyfnod 2 (Hydref 2013-Medi 2015)

Galwyd y tîm rheoli brigiad ynghyd eto ym mis Hydref 2013 mewn ymateb i bum achos arall o TB â chysylltiadau â'r dafarn yn Llwynhendy, gan ddod â'r cyfanswm i 14 o achosion. Un o'r achosion newydd oedd cynorthwyydd addysgu mewn ysgol gyfun leol. Cynhaliwyd un ar ddeg o gyfarfodydd yn y cyfnod hwn nes iddynt ddod i ben yn ôl pob tebyg heb ddatganiad ffurfiol bod y brigiad drosodd. Fel o'r blaen, roedd y tîm yn cynnwys cynrychiolwyr o'r adrannau amgylcheddol ac iechyd y cyhoedd, microbioleg, a nyrsio

arbenigol a chefnogaeth feddygol. Y tro hwn cadeiriwyd y cyfarfodydd gan ymgynghorydd dros dro ym maes Diogelu Iechyd.

Diffiniad o'r achos

Ehangwyd y diffiniad o'r achos i gynnwys unrhyw achos o TB o Sir Gaerfyrddin o 2009 ymlaen â phroffil VNTR o 32333. Efallai fod y diffiniad wedi bod yn rhy eang o ystyried bod gwybodaeth ficrobiolegol a rannwyd yn y cofnodion yn awgrymu bod 115 o achosion, heb fod yn gysylltiedig â'i gilydd mae'n debyg, â theip tebyg wedi'u nodi yng Nghymru a Lloegr.

Olrhain cysylltiadau

Bryd hyn, sylweddolwyd bod y trefniadau sgrinio cysylltiadau wedi bod yn annigonol o'r dechrau, felly rhoddwyd cynlluniau ar waith i ailystyried ac ailadrodd y gwaith o sgrinio'r cysylltiadau gwreiddiol. Llwyddwyd i gysylltu ag aelodau'r tîm dartiau yn y diwedd a chytunasant i gydweithredu. Cydnabuwyd y gallai rhan helaeth o'r rhyngweithio cymdeithasol rhwng achosion a'r tîm dartiau fod wedi ymestyn i ail dafarn.

Yn dilyn hyn daeth y tîm rheoli brigiad yn ymwybodol o achos o TB yn yr ysgol uwchradd leol (Ysgol y Strade). Cymerwyd yn ganiataol i ddechrau, yn gwbl resymol, bod yr achos yn yr ysgol yn gysylltiedig â brigiad Llwynhendy, ond dangosodd y broses deipio ddilynol nad oedd yr organeb yn gysylltiedig. O edrych yn ôl, efallai y byddai wedi bod yn well bryd hynny cael tîm rheoli brigiad ar wahân ar gyfer y clwstwr yn yr ysgol, oherwydd roedd proses sgrinio'r ysgol yn dal i achosi dryswch pan oedd yr achosion yn cael eu trafod gydag achosion Llwynhendy. Roedd rhywfaint o bryder hefyd y gallai'r adnoddau lleol fod wedi bod yn annigonol, yn enwedig o safbwynt nyrsys arbenigol. Yn y cyswllt hwn, cytunodd Dr Carol Llewellyn-Jones i gymryd y rôl arweiniol ar gyfer gwasanaeth clinigol TB yn ardal Hywel Dda. Roedd cydnabyddiaeth erbyn hyn bod TB yn dal i gael ei drosglwyddo yn y gymuned ac y byddai rhagor o achosion clinigol â nodweddion Llwynhendy yn dal i ddod i'r amlwg. Mae'n werth nodi yn y cyswllt hwn bod y gwasanaethau'n ymdrin â chwe achos/clwstwr arall o TB yn Sir Gaerfyrddin.

Ar adeg cyfarfod diwethaf y tîm ym mis Medi 2015, roedd dau achos arall (un yn achos cudd) â chysylltiadau â'r dafarn wedi cael eu nodi, ond ni chredid bod angen gwaith olrhain cysylltiadau helaeth gan nad oedd llawer o gysylltiadau agos. Er na chafodd brigiad o achosion Llwynhendy ei gau'n ffurfiol bryd hyn, ni chynhaliwyd rhagor o gyfarfodydd.

Roedd adroddiad interim ar y brigiad ar gyfer y ddau gyfnod cyntaf ar gael i'r panel, ond nid adroddiad terfynol. Bryd hyn, roedd y brigiad yn cynnwys 19 achos o glefyd gweithredol, ond mae'n bosibl bod y nifer hwn yn cynnwys rhai achosion â theip gwahanol nad oeddent felly'n gysylltiedig â'r achos cyfeirio gwreiddiol.

Barn y Panel

Yn yr ail gyfnod, roedd yn ymddangos bod trefniadau rheoli iechyd y cyhoedd wedi gwella â chamau gweithredu cliriach, arweinyddiaeth a chydnabyddiaeth y gallai'r olrhain cysylltiadau gwreiddiol yng nghyfnod 1 fod wedi bod yn annigonol. Daeth yn amlwg hefyd fod TB o fwy nag un ffynhonnell yn dal i gael ei drosglwyddo yn Sir Gaerfyrddin, gydag organeb a oedd yn ôl y sôn wedi ymledu i'r ardal o Loegr ar hyd coridor yr M4. Roedd achosion a chlystyrau eraill â gwahanol straeniau hefyd yn digwydd yr un pryd yng ngorllewin Cymru. Ystyriwyd y posibilrwydd y byddai angen ymateb sgrinio cymunedol yn y dyfodol bryd hyn gan y gallai'r brigiad yr un pryd mewn ysgol yn Llanelli fod yn gysylltiedig. O edrych yn ôl, dylid bod wedi ymdrin â hwn fel tîm brigiad ar wahân. Fodd bynnag, nes bod straen yr organeb wedi'i adnabod fel un gwahanol, roedd y tîm yn iawn i gymryd bod cysylltiad â Llwynhendy yn debygol iawn. Roedd achosion â chysylltiadau â'r dafarn yn dal i ddod i'r amlwg, felly nid yw'n amlwg pam na chynhaliwyd rhagor o gyfarfodydd y tîm ar ôl mis Medi 2015.

Cyfnod 3 (Tachwedd 2017-Ebrill 2018)

Cafodd y tîm rheoli brigiad ei alw'n ôl am ddau gyfarfod arall o ganlyniad i achos newydd â chysylltiadau â'r dafarn trwy eu rhieni, a oedd ill dau wedi cael TB o'r blaen. I wneud yr achos yn fwy cymhleth, roeddent wedi gweithio mewn cartref gofal tra oedd ganddynt symptomau. Roedd yr achos

wedi sgrinio'n negatif trwy brawf croen twbercwlin dair blynedd yn gynharach. Cwblhawyd proses sgrinio TB ar gyfer y teulu a staff a phreswylwyr y cartref gofal. Cafodd sgrinio ehangach ei ystyried hefyd, ond ni chymerwyd camau pellach bryd hyn. Ni ddarganfuwyd tystiolaeth o drosglwyddo parhaus felly ni ddilynwyd y trywydd hwn, ond tynnwyd sylw meddygon teulu yn yr ardal a'u hatgoffa i fod yn wyliadwrus.

Barn y Panel

Roedd yr ymateb i'r achos newydd yn briodol ac roedd y dogfennau'n glir. Cydnabuwyd bod risg y byddai rhagor o achosion yn codi yn y dyfodol a pharhawyd i gadw llygad.

Cyfnod 4 (Tachwedd 2018-presennol)

Galwyd y tîm rheoli brigiad yn ôl ym mis Tachwedd 2018 oherwydd tair marwolaeth yn gysylltiedig â heintiad gan straen y brigiad. Un achos, heb gysylltiad uniongyrchol amlwg â'r dafarn yn Llwynhendy oedd person heb salwch blaenorol arwyddocaol a fu farw'n sydyn â sepsis heb ddechrau triniaeth am TB hysbys ar yr ysgyfaint. Roedd y ddwy farwolaeth arall yn yr ardal yn bobl ar driniaeth am TB, ond roedd gan y naill a'r llall glefyd sylfaenol difrifol (methiant y galon a chanser yr ysgyfaint). Yn y ddau achos hyn, ni nodwyd TB ar y dystysgrif marwolaeth fel prif achos y farwolaeth. Y tro hwn, ystyriwyd bod 24 o achosion gweithredol yn rhan o'r brigiad a oedd yn gysylltiedig â'r dafarn. Ni chredid bod tri achos arall a oedd â'r un teip MIRU-VNTR, ond heb gysylltiad epidemiolegol, yn rhan o'r brigiad. Credid bod pump o'r 24 achos yn gyfrifol am drosglwyddo'r haint. Daeth adolygiad o'r brigiad i'r casgliad bod y lefel uchel o drosglwyddo a chyffredinrwydd TB cudd bellach yn cyfiawnhau sgrinio cymunedol eang a gomisiynwyd yn dilyn hyn. Cytunwyd hefyd i newid y terfyn oedran ar gyfer triniaeth am TB cudd o 35 oed i 65 oed yn unol â'r canllawiau a ddiwygiwyd gan NICE yn ddiweddar. Dyddiad cofnodion cyfarfod diwethaf y tîm rheoli brigiad a welwyd gennym ni oedd Chwefror 2022, pan gafwyd crynodeb o'r brigiad ond dim datganiad ffurfiol ei fod drosodd. Deallwn fod cyfarfod arall o'r tîm wedi'i gynnal ym mis Medi 2022.

Barn y Panel

Cadeiriwyd y cyfarfodydd rheoli brigiad yng nghyfnodau tri a phedwar gan ymgynghorydd iechyd y cyhoedd profiadol. Roedd y dogfennau'n glir erbyn hyn, â chamau arfaethedig wedi'u diffinio ac yn cael eu dilyn mewn cyfarfodydd dilynol. Roedd y trefniadau ar gyfer olrhain cysylltiadau achosion gweithredol yn drylwyr. Mae'r penderfyniadau a'r newidiadau polisi i gyd yn briodol, ac roedd y symud tuag at sgrinio cymunedol yn amserol ac yn gywir er mwyn asesu maint y risg i'r gymuned ac er mwyn lleihau pryder y cyhoedd.

Sgrinio Cymunedol

Credai'r tîm rheoli brigiad, yn gwbl briodol, fod angen rhaglen sgrinio'r boblogaeth er mwyn lleihau'r pryderon a chanfod i ba raddau yr oedd yr haint wedi lledaenu yn y gymuned. Rhoddwyd y gwaith hwn ar gontract i sefydliad o'r enw Find and Trace, yn cael ei gefnogi gan Oxford Immunotec, a oedd yn gyfrifol am brofion gwaed a phrofion IGRA. Roedd y boblogaeth a sgriniwyd yn cynnwys y rhai hynny nad oeddent wedi bod yn rhan o'r broses olrhain cysylltiadau flaenorol neu a oedd wedi gwneud hynny cyn newid canllawiau NICE yn 2016. Yn ychwanegol at hyn, gwahoddwyd unrhyw un â chysylltiad â thafarn leol yn Llwynhendy rhwng 2005 a 2018 ac unrhyw un, nad oedd wedi ei nodi o'r blaen, a oedd yn credu ei fod wedi bod mewn cysylltiad â rhywun â TB cyn iddo gael triniaeth.

Cynhaliwyd dau sesiwn sgrinio cymunedol, un ym mis Mehefin ac un ym mis Medi 2019 mewn lleoliadau cyfleus. Yn y sesiwn cyntaf cafodd 1188 o bobl brofion IGRA a chafwyd 76 canlyniad positif (6.4%). Yn yr ail sesiwn profwyd 772 o bobl a chafwyd 128 (16.6 %) canlyniad positif ar gyfer TB cudd. Roedd y rhan fwyaf o'r rhai a sgriniwyd (94%) wedi'u geni yn y DU. Roedd cyffredinrwydd TB cudd yn y ddau grŵp yn sylweddol uwch na chyfartaledd y DU. Y ffactor cryfaf a oedd yn gysylltiedig â chanlyniad IGRA positif oedd mynd i dafarn leol yn Llwynhendy yn y cyfnod 2009-10. Un rheswm dros y gwahaniaeth rhwng y cyfraddau positifedd yn y ddau sesiwn

sgrinio yw'r ffaith fod mwy o wahoddiadau wedi'u targedu wedi'u hanfon yn yr ail gyfnod.

Mae tua 300 o gysylltiadau wedi'u nodi na ddaeth i'r sesiynau cymunedol yn dal i gael eu gwahodd i'r clinigau gwasanaeth TB. Ni wyddom faint o'r rhain sy'n dal heb gael eu hasesu ond deallwn ein bod yn dal i fyny.

Gwasanaeth TB Clinigol yn ardal Hywel Dda

Ar ddechrau'r brigiad nid oedd gwasanaeth TB ffurfiol wedi'i gydgysylltu yn ardal Hywel Dda. Byddai'r achosion wedi cael sylw wrth iddynt ddod i'r amlwg gan aelodau o'r tîm o feddygon ymgynghorol anadlol. Ar y pryd roedd cryn ansefydlogrwydd yn y gweithlu meddygol o ganlyniad i newid sefydliadol a methiant i recriwtio i swyddi meddygon ymgynghorol parhaol. Cafodd y gwaith olrhain cysylltiadau ei wneud gan nyrs anadlol gyffredinol, ond ar ddechrau'r brigiad yn Llwynhendy cafodd nyrsys o Iechyd Cyhoeddus Cymru eu galw i mewn i helpu.

O ganlyniad i'r brigiad, sefydlwyd sesiwn wedi'i ariannu yn 2014 pan benodwyd Dr Llewellyn Jones fel y meddyg arweiniol ar gyfer TB, yn cael ei chynorthwyo gan ei nyrs anadlol gyffredinol yng Nghaerfyrddin. Cynhaliwyd clinigau bob pythefnos fwy neu lai gan ddibynnu ar y galw, ond yn llai aml os oedd y meddyg ymgynghorol ymaith. Mewn achosion brys, mae'n bosibl hefyd bod cleifion wedi cael eu cyfeirio trwy'r llwybr canser yr ysgyfaint neu drwy'r adran damweiniau ac achosion brys ac yna'u cyfeirio ymlaen i'r clinig ar ôl cael diagnosis. Yn 2019, cafwyd rhagor o gyllid i benodi Kelly Goddard fel y nyrs TB ddynodedig gyntaf. Trwy'r adeg, mae gwaith olrhain cysylltiadau ac ymweld â chartrefi wedi cael ei gefnogi hefyd gan nyrsys Iechyd Cyhoeddus Cymru. Erbyn hyn mae Dr Llewellyn Jones wedi ymddeol a throsglwyddwyd ei dyletswyddau i Dr Gareth Collier sy'n parhau â'r un model gwasanaeth.

Barn y Panel

Gwelwyd gwelliant sylweddol yng ngofal cleifion TB a'u cysylltiadau ers penodi Dr Llewellyn Jones fel clinigydd arweiniol. Mae wedi datblygu'r

gwasanaeth, ac wedi ymdrin â brigiadau eraill ar wahân i frigiad Llwynhendy, a dal i glirio'r cysylltiadau sydd ar ôl o'r rhaglen sgrinio cymunedol. Mae rhai problemau adnoddau yn dal y tîm yn ôl o hyd. Un broblem yw prinder staff llanw yn ystod absenoldeb blynyddol, sy'n gadael y gwasanaeth TB yn fregus pan fydd y meddyg ymgynghorol neu'r nyrs ar wyliau. Gall hyn achosi oedi cyn dechrau triniaeth. Mae'r diffygion eraill yn cynnwys diffyg cymorth gweinyddol ffurfiol, cefnogaeth fferyllol ddigonol i ganiatáu goruchwyliaeth DOT/VOT a fflebotomi. Deallwn fod fflebotomydd wedi'i benodi erbyn hyn. Bydd cefnogaeth weinyddol ddigonol a phwrpasol hefyd yn helpu i sicrhau gwasanaeth effeithlon, ac yn lleihau'r pwysau sydd ar y tîm.

Er bod nifer yr achosion o TB gweithredol yn ardal Hywel Dda yn isel, mae'r llwyth gwaith yn dal yn sylweddol oherwydd bod y gwaith o olrhain cysylltiadau a goruchwylio triniaeth ar gyfer TB cudd yn parhau. Yn ychwanegol at hyn, mae problemau'n codi mewn cysylltiad â phoblogaethau ffoaduriaid a mewnfudwyr, yn ogystal ag ymwrthedd i gyffuriau a mycobacteria nad ydynt yn achosi TB.

Adolygiad o'r achosion clinigol

Llwyddodd y panel i adolygu cofnodion clinigol 26 o gleifion allan o gyfanswm o 38. Nid oedd rhai nodiadau ar gael oherwydd bod y cleifion wedi marw a'r cofnodion wedi'u dinistrio, neu oherwydd bod y cleifion yn byw y tu allan i ardal Hywel Dda. Roedd gan bob un o'r achosion a adolygwyd gennym TB ar yr ysgyfaint, ac roedd un ar ddeg ohonynt wedi cael canlyniad prawf rhwbiad positif, a oedd yn golygu eu bod yn heintus. Roedd hyd y symptomau yn amrywio o un wythnos i saith mis, â chanolrif o 133 diwrnod (yr oedi canolrifol cyn cyflwyno yn Lloegr yw 79 diwrnod). Yn yr achos hwn, roedd gan yr achos cyfeirio heintus iawn symptomau am saith mis cyn cael diagnosis. Yn dilyn diagnosis, canfuwyd bod triniaeth briodol at ei gilydd yn cael ei rhoi yn fuan ac yn cael ei chwblhau. Mewn wyth o achosion y brigiad roedd TB wedi'i restru fel achos marwolaeth neu yn gysylltiedig â marwolaeth. O'r cofnodion y llwyddodd y Panel i'w

harchwilio, roedd y rhan fwyaf yn nodi TB fel nodwedd atodol, ac roeddent wedi marw o salwch difrifol arall yn bennaf, gan gynnwys canser, clefyd y galon, sirosis yn gysylltiedig ag alcohol a chydafiachedd yn gysylltiedig ag atal imiwnedd. Dim ond mewn un achos yr oedd yn amlwg mai TB oedd prif achos y farwolaeth, ond yn yr achos hwn, er bod y diagnosis yn gymharol gyflym, roedd cyfnod byr o oedi cyn rhoi triniaeth. Yn y ystod y cyfnod hwn roedd y gwasanaeth TB wedi'i atal dros dro oherwydd prinder staff llanw yn ystod cyfnod o wyliau blynyddol. Dirywiodd y cwrs clinigol dilynol i'r claf yma yn syndod o gyflym, ac mae'n bosibl bod sepsis hefyd wedi cymhlethu pethau.

Canllawiau clinigol

Nid oes canllawiau clinigol penodol ar gyfer TB yng Nghymru, ac nid yw'r canllawiau a gyhoeddwyd gan NICE yn ddiweddar wedi cael eu cymeradwyo'n ffurfiol yng Nghymru. Gan nad oes dogfennau ar gyfer gwledydd penodol, yr arfer cyffredin yw dilyn canllawiau BTS a chanllawiau dilynol NICE. Mae cyfeiriadau niferus yng nghofnodion cyfarfodydd y tîm rheoli brigiad at yr angen i ddilyn fersiynau cyfredol y canllawiau hyn. Mae hyn yn arbennig o berthnasol i reoli TB cudd, lle newidiodd y cyngor yn 2016 i gynnig triniaeth ataliol nid yn unig i'r rhai dan 35 oed ond hefyd i'r rhai yn y grŵp oedran 35-65. Perswadiwyd y panel fod clinigwyr yng Nghymru yn dilyn yr un canllawiau â gweddill y Deyrnas Unedig.

Y rhyngweithio rhwng y Bwrdd Iechyd ac Iechyd Cyhoeddus Cymru

Mae'r cyfrifoldeb cychwynnol am reoli brigiad o glefyd heintus yn nwylo'r Bwrdd Iechyd a'r Cyfarwyddwr Iechyd y Cyhoedd lleol. Mae Iechyd Cyhoeddus Cymru yn darparu trosolwg a chefnogaeth ymarferol lle mae angen. Amlinellir y rhwymedigaethau hyn yn y gorchmynion sefydlu statudol ar gyfer y ddau sefydliad o 2009 ymlaen. Cyhoeddwyd y polisi rheoli brigiad cyntaf gan Iechyd Cyhoeddus Cymru yn 2011 a'r diweddariad diweddaraf yn 2022. Polisïau cyffredinol yw'r rhain ar y cyfan, ond maent yn ymdrin yn fanylach ag achosion sy'n gysylltiedig â bwyd a haint a gludir mewn dŵr. Mae gan Iechyd Cyhoeddus Cymru bolisi gweithredu safonol ar

gyfer rheoli achosion o TB, a gyhoeddwyd yn 2017, ond nid yw'r polisi hwn yn ymdrin â'r tîm rheoli brigiad. Yn rhan gynnar y brigiad, roedd cynrychiolwyr arbenigol o Iechyd Cyhoeddus Cymru yn aelodau o'r tîm rheoli brigiad cychwynnol, ond ymddengys nad yw eu presenoldeb wedi parhau trwy gyfarfodydd diweddarach cyfnod 1, ac mae'n bosibl bod hyn wedi cyfrannu tuag at yr holl benderfyniadau a wnaethpwyd. Ymddengys nad oedd uwch gynrychiolydd o Iechyd Cyhoeddus Cymru na'r cyfarwyddwr iechyd y cyhoedd lleol ar y pryd yn bresennol yn nau gyfarfod olaf cyfnod 1. Wrth gwrs, mae'n bosibl bod cyfathrebu'n digwydd yn y cefndir trwy ebost neu drwy ddull arall. Defnyddiwyd nyrsys Iechyd Cyhoeddus Cymru i roi cymorth ymarferol â'r gwaith olrhain cysylltiadau. Yn y cyfnodau diweddarach, cadeiriwyd y tîm rheoli brigiad gan feddyg ymgynghorol profiadol o Iechyd Cyhoeddus Cymru (Dr Brendon Mason) a gwelir gwelliant mawr yn y dull o reoli'r brigiad.

Roedd y Panel yn synnu nad oedd cyfeiriad at y brigiad yng nghofnodion cyfarfodydd BIP Hywel Dda na Bwrdd Iechyd Cyhoeddus Cymru tan 2019. Mae'n ymddangos mai ar ôl i'r wasg ddangos diddordeb yn yr achos angheuol yn 2018, ac yn dilyn y rhaglen sgrinio cymunedol a chŵyn ysgrifenedig i Iechyd Cyhoeddus Cymru y flwyddyn ganlynol, y trafodwyd y brigiad yn ffurfiol ar lefel bwrdd. Mae'n bosibl bod rhywfaint o drafodaeth wedi bod yn y tîm gweithredol. Roedd y drafodaeth ddilynol gan y bwrdd yn cynnwys cynnig rhywfaint o adnoddau i BIP Hywel Dda ar gyfer y gwaith sgrinio cymunedol. Roedd Iechyd Cyhoeddus Cymru yn ymdrin ag o leiaf ddau frigiad arall o achosion o TB a dechrau pandemig COVID ar y pryd. Roedd cofnodion Bwrdd BIP Hywel Dda ym mis Ionawr 2020 yn amlinellu'r camau y dylid eu cymryd er mwyn cyfyngu'r brigiad o achosion yn Llwynhendy. Roedd hyn yn cynnwys parhau i gynnig gwasanaeth sgrinio, yn enwedig i blant, trin achosion o TB cudd a chynnig imiwneiddiad BCG i'r rhai hynny a oedd yn profi'n negatif os oeddent dan 35 oed.

Adolygiadau mewnol Iechyd Cyhoeddus Cymru

Yn dilyn cwyn ffurfiol i Iechyd Cyhoeddus Cymru, ynglŷn â methiant i reoli'r brigiad, cynhaliwyd adolygiad mewnol. Roedd yr adolygiad ar ffurf archwiliad byr o'r dogfennau perthnasol gan y cyfarwyddwr meddygol a chyfarwyddwr anweithredol profiadol. Dilynwyd yr adolygiad mewnol hwn gan ddau sesiwn ôl-drafod i archwilio perfformiad Iechyd Cyhoeddus Cymru yn y brigiad. Canfu'r adolygiad mewnol fethiannau yn yr ymateb iechyd y cyhoedd cychwynnol, a chododd gwestiynau ynglŷn â'r rhyngweithiad rhwng Iechyd Cyhoeddus Cymru a'r Bwrdd Iechyd. Yn ychwanegol at hyn, roedd rhywfaint o ansicrwydd ynglŷn â rhan, neu ddiffyg rhan, Llywodraeth Cymru yn y broses, a diffyg system strwythuredig i reoli brigiadau o glefyd a haint TB yn benodol.

Arweiniodd y sesiynau ôl-drafod at nifer o argymhellion ymarferol, ond nid yw'r Panel yn siŵr a gafodd unrhyw rai o'r argymhellion hyn eu rhoi ar waith. Mae llawer o'r argymhellion hyn yn cael eu cymeradwyo gan y Panel hwn. Ni wnaeth yr adolygiad mewnol hwn fynd i'r afael â'r materion cenedlaethol ehangach sy'n ymwneud â rheoli TB, er enghraifft trwy'r Adolygiad Cohort Cenedlaethol neu Gynllun Cenedlaethol i Gymru.

Adolygiadau eraill

Roedd y panel yn ddiolchgar i Dr Brendon Mason, a fu'n cadeirio'r tîm rheoli brigiad yn y cyfnodau diweddarach, ac sydd hefyd wedi paratoi nifer o ddadansoddiadau o'r brigiad. Roedd y rhain yn cynnwys epidemioleg, risg trosglwyddo ac ymchwiliadau i'r marwolaethau cysylltiedig. Roedd y dadansoddiad yn ddefnyddiol iawn er mwyn nodi'r risg gychwynnol uchel o drosglwyddo o'r achos cyfeirio (70% o'r cysylltiadau agos ac 20% o'r cysylltiadau cymdeithasol a sgriniwyd). Mae hyn yn cadarnhau'r amgylchedd cysylltiedig a statws rhwbiad sbwtwm yr achos cyfeirio fel risg "archledaenwr". Mae'n bosibl y gellid bod wedi dod i'r casgliad hwn yn llawer cynharach yn y brigiad.

Y darlun cenedlaethol

Yn hanesyddol, mae clefydau anadlol wedi bod yn rhan amlwg o brofiad pobl Cymru erioed. Mae gwaddol TB, clefyd ysgyfaint y glowyr a chysylltiad clefydau anadlol â thlodi wedi cael effaith barhaol. Mae Llywodraeth Cymru wedi cefnogi Cynllun Cyflawni Iechyd Anadlol er 2018. Mae hyn yn cynnwys adran am reoli TB yn well oherwydd er bod y cyfraddau heintio yn is yng Nghymru, mae'n ymddangos bod y cyfraddau marwolaethau yn uwch nag yn unrhyw ran arall o'r DU. Mae'r Cynllun Cyflawni wedi ymestyn y Rhaglen Adolygiad Cohort Cenedlaethol sydd wedi bod yn cael ei gweithredu'n answyddogol er 2012. Mae'r adolygiad cohort yn cynnig consensws ar bob achos sy'n deillio o system gwyliadwriaeth fanylach (ETS) y DU ac mae'n cyfarfod yn chwarterol. Gall hefyd gynnig cyngor ar ymdrin ag ymwrthedd i gyffuriau, sgrinio mewnfudwyr newydd a rheoli achosion anodd. Erbyn hyn mae gan y cynllun gynrychiolwyr o staff meddygol a nyrsio ym mhob bwrdd iechyd, er nad oes gan bob un sesiynau ffurfiol sy'n cael eu hariannu ar gyfer TB. Mae BIP Hywel Dda wedi bod yn cyfrannu i'r adolygiad cohort ers i Dr Llewellyn Jones ymgymryd â'i rôl yn 2015.

Mae'r Cynllun Cyflawni hefyd yn cynnwys cynnig yn ymwneud â Chynllun Cenedlaethol Cymreig ar gyfer TB, gan gynnwys polisi newydd ar gyfer mudwyr. Ysgrifennwyd y cynnig, "Strategaeth Twbercwlosis a Manyleb Gwasanaeth ar gyfer Cymru 2021-2026" gan Dr Gwen Lowe (sy'n gweithio i Iechyd Cyhoeddus Cymru) ar ran y Grŵp Cyflawni. Cyflwynwyd y ddogfen hon i'w hystyried gan Lywodraeth Cymru dros 12 mis yn ôl, ond hyd yn hyn, nid oes ymateb ffurfiol wedi dod i law. Ar y llaw arall, mae gan y GIG yn Lloegr strategaeth gydweithredol ffurfiol (NHSE ac UKHSA) ar gyfer rheoli TB er 2015.

8. Casgliadau

Mae'r brigiad o achosion o twbercwlosis dynol, a gafodd ei adnabod i ddechrau yn Llwynhendy yn 2010, yn parhau i achosi pryder heddiw, dros ddegawd yn ddiweddarach. Nid yw'r straen perthnasol o MTB yn unigryw i'r brigiad a oedd â'i ganolbwynt mewn tafarn; mae wedi'i gofnodi mewn rhannau eraill o'r DU hefyd. Roedd yr achos cyfeirio yn y brigiad wedi dioddef symptomau ers cyfnod maith cyn cael diagnosis, ac roedd yn heintus iawn mewn amgylchedd cymdeithasol y gellid rhagweld y byddai wedi arwain at lefelau trosglwyddo uchel. O ganlyniad, bu o leiaf 31 (30 unigolyn) achos o TB gweithredol ar yr ysgyfaint, ac o leiaf 300 o achosion o haint TB cudd. Canfu adolygiad ôl-weithredol o'r samplau â meithriniad a theipio WGS a oedd ar gael 18 o achosion wedi'u profi yn ystod y brigiad. Dros y blynyddoedd, mae'r ymateb i'r brigiad wedi arwain at olrhain 663 o gysylltiadau unigol a rhaglen sgrinio cymunedol, sydd wedi profi 1950 o bobl. Roedd yr ymarfer olaf yn dangos lefel ryfeddol o uchel o haint TB yn y boblogaeth leol (11% ar gyfartaledd) a oedd ar ei huchaf ymhlith pobl a oedd â chysylltiad hanesyddol â'r dafarn yn Llwynhendy neu'r achos cyfeirio. Er na allwn fod yn sicr bod y lefel uchel o haint TB yn y gymuned i gyd yn gysylltiedig â'r brigiad, mae'n awgrymu bod risg uchel o frigiad yn y gymuned yn y dyfodol.

Mae patrwm TB yng ngorllewin Cymru yn wahanol i'r patrwm arferol a welir yn y DU. Mae'r achosion y mae'r panel wedi'u harchwilio gan mwyaf yn bobl sydd wedi'u geni yn y DU a oedd i gyd â chlefyd ar yr ysgyfaint. Mae hyn yn wahanol i'r cyflwyniad cyffredin yn ardaloedd trefol Prydain, lle mae'r rhan fwyaf o'r achosion yn digwydd ymhlith pobl sydd wedi'u geni y tu allan i'r DU, a lle mae gan tua hanner ohonynt TB y tu allan i'r ysgyfaint. Mae'n bosibl bod y gwahaniaeth hwn mewn demograffeg yng ngorllewin Cymru yn deillio o oedi cyn cael diagnosis, a mwy o drosglwyddo'r clefyd o ganlyniad i hynny, nes bod lefel uwch o ymwybyddiaeth feddygol a chyhoeddus.

Cefndir TB

Mae gan Gymru gyfraddau isel o TB, sydd at ei gilydd wedi'i gyfyngu i ardaloedd trefol, ond er bod nifer yr achosion yn isel, mae cyfraddau'r marwolaethau ddwywaith cymaint ag yn Lloegr. Mae cyfradd genedlaethol TB yn gostwng, ond ffigurau 2018 yw'r rhai diweddaraf sydd ar gael. Mae nifer yr achosion newydd o TB gweithredol yn ardal Hywel Dda yn isel iawn, ond mae wedi parhau i amrywio. Fel yr eglurwyd uchod, nid yw'r achosion yn ffitio'r un patrwm ag a welir mewn rhannau eraill o'r DU. O ganlyniad, mae angen i weithwyr iechyd proffesiynol a'r cyhoedd ddal i gadw llygad am frigiadau eraill yn y dyfodol. Gwelsom fod rhai o'r cysylltiadau yn y boblogaeth a gafodd eu dal yng nghanol y brigiad yn gyndyn i gydweithredu â'r broses olrhain cysylltiadau.

Gwasanaethau meddygol ar ddechrau'r brigiad

Ar adeg y brigiad roedd y gwasanaethau meddygol yn wynebu llawer o newidiadau mewn cyfnod o uno gwasanaethau ac ad-drefnu ysbytai. Roedd y gwasanaeth anadlol yn methu â phenodi meddygon ymgynghorol ac yn gorfod dibynnu ar weithwyr locwm i lenwi'r bylchau. Yn ychwanegol at hyn, nid oedd ymgynghorydd arweiniol dynodedig ar gyfer TB na nyrs TB ddynodedig i redeg gwasanaeth penodol ar gyfer y clefyd.

Rheoli'r brigiad ar y dechrau

Roedd y trefniadau cychwynnol ar gyfer rheoli'r brigiad yn annigonol. Cafodd y clwstwr o achosion ei godi'n gyflym gan y tîm microbioleg a chynhaliwyd cyfarfod cyntaf y tîm rheoli brigiad yn fuan, ond cynhaliwyd y cyfarfodydd diweddarach yn anaml ac nid oedd ymdeimlad o frys i'w weld. Roedd y broses o gadw cofnodion yn wael ac yn ddi-drefn. Roedd aelodaeth y tîm yn anghyson ac mae'n ymddangos fel pe bai cynrychiolaeth ychwanegol Iechyd Cyhoeddus Cymru a'r Cyfarwyddwr Iechyd y Cyhoedd lleol wedi drifftio i ffwrdd gan adael y tîm yn brin o gyngor profiadol. Roedd yn amlwg iawn yn gynnar yn y brigiad bod yr achos cyfeirio yn heintus iawn, ond roedd y broses olrhain cysylltiadau wedi'i chyfyngu i deulu a chysylltiadau cymdeithasol agos. Roedd amgylchedd ffisegol y dafarn yn un

lle gallai heintiau anadlol gael eu trosglwyddo'n hawdd iawn, ond mae'n ymddangos na chafodd hyn ei archwilio. Roedd methiant i ddeall rôl rhyngweithiadau cymdeithasol rhwng cwsmeriaid yn y dafarn yn Llwynhendy a thafarndai eraill, yn ogystal â rôl bosibl y tîm dartiau teithiol wrth ledaenu clefyd a haint TB yn ehangach. Cafodd y tîm rheoli brigiad ei derfynu'n rhy fuan o bosibl, heb sylweddoli natur archledwr y brigiad. Roedd methiant hefyd i sylweddoli bod angen rhwyd olrhain cysylltiadau llawer ehangach ymhlith cysylltiadau nad oeddent yn rhannu'r un aelwyd. Mae'n bosibl y byddai tîm olrhain cysylltiadau a fyddai'n fwy cyfarwydd â phatrymau ymddygiad lleol wedi gweithredu'n wahanol.

Ar ôl i ragor o achosion ymddangos cychwynnwyd ail gyfnod o gyfarfodydd rheoli brigiad a gwelwyd gwelliant o ran perfformiad a chadw cofnodion. Er hyn, cymhlethwyd y tîm gan y brigiad o achosion a welwyd yr un pryd yn yr ysgol, ond nad oedd yn gysylltiedig yn y pen draw. Efallai fod hyn wedi arwain at golli ffocws ar y broblem wreiddiol. Roedd cydnabyddiaeth bod rhagor o achosion yn debygol o godi, ond daeth y cyfarfodydd i ben yn raddol, heb eglurhad, a heb drefniant i barhau nac i gau'r brigiad.

Galwyd tîm y brigiad yn ôl pan arweiniodd achos arall at farwolaeth. O'r adeg hynny ymlaen, roedd gan gyfarfodydd tîm cyfnodau 3 a 4 uwch arweinyddiaeth a chynrychiolaeth ddigonol. Sylweddolwyd yn y diwedd bod angen sgrinio cymunedol er mwyn canfod maint y brigiad a'i reoli.

Rheoli achosion clinigol

Fel y nodwyd eisoes, nid oedd gwasanaeth TB ffurfiol yn ardal Hywel Dda tan 2014, ac nid oedd nyrs TB ddynodedig tan 2019. Mae'r sefyllfa wedi gwella'n sylweddol erbyn hyn dan arweinyddiaeth Dr Llewellyn Jones a'i holynydd, Dr Gareth Collier. Cyn ei phenodiad hi, roedd yr achosion yn cael eu trin gan ymgynghorwyr anadlol amrywiol, er bod y driniaeth, hyd y gwelwn, yn ddigonol ac yn fuan ar ôl i'r diagnosis gael ei wneud. Mae pryder bod achosion heb eu hadnabod yn y gymuned o hyd oherwydd diffyg ymwybyddiaeth sylfaenol ymhlith staff gofal sylfaenol a'r cyhoedd.

Roedd yn amlwg o'n hymchwiliad i'r cofnodion fod llawer o gydafiachedd ymhlith pobl a oedd yn datblygu TB. Efallai fod hyn yn adlewyrchu'r anghydraddoldebau iechyd sylfaenol yn y gymuned. Roedd gan y bobl a fu farw â diagnosis cyfredol neu flaenorol o TB, ar wahân i un, salwch sylfaenol difrifol a oedd yn bennaf gyfrifol am y farwolaeth. Mewn un achos angheuol lle cofnodwyd TB fel prif achos y farwolaeth, roedd ffactorau wedi arwain at oedi cyn byr rhoi triniaeth.

Ffactorau systemig

Roedd yn amlwg bod BIP Hywel Dda yn gyfrifol trwy'r Cyfarwyddwr Iechyd y Cyhoedd am reolaeth gychwynnol y brigiad, a'i fod yn dirprwyo i'r ymgynghorydd rheoli clefydau trosglwyddadwy. Rôl Iechyd Cyhoeddus Cymru oedd darparu goruchwyliaeth, arbenigedd ac adnoddau ychwanegol pan oedd angen. Roedd yr ymateb cyntaf i'r brigiad yn ddiffygiol ac nid oedd yn ymddangos bod y cyfrifoldebau wedi'u diffinio'n glir. O'r trydydd cyfnod ymlaen, mae'n ymddangos bod gan Iechyd Cyhoeddus Cymru ddylanwad cryfach ar ddigwyddiadau. Nid yw'n ymddangos bod gan y naill Fwrdd na'r llall wybodaeth am y brigiad tan 2019. Daeth yr adolygiadau mewnol a gomisiynwyd gan Iechyd Cyhoeddus Cymru i gasgliadau tebyg i'r panel hwn ond byddent wedi gallu gwneud hynny'n gynharach â mwy o ymwybyddiaeth o'r dechrau. Yn ogystal, byddem wedi disgwyl i Iechyd Cyhoeddus Cymru chwarae rôl arweiniol wrth bennu protocolau a pholisi cenedlaethol ar gyfer TB fel yr Asiantaeth Diogelu Iechyd yn Lloegr. Yn hytrach, mae'n ymddangos bod hyn wedi'i adael i'r Grŵp Cyflawni sy'n cael ei arwain gan yr arbenigedd sydd wedi cynnal yr adolygiad cohort a chynnig cynllun cenedlaethol. Mae Iechyd Cyhoeddus Cymru wedi ymwneud rhywfaint â'r olaf.

9. Argymhellion

(1) Nid yw'r brigiad wedi dod i ben eto ac mae'r lefel uchel o haint TB cudd yn y boblogaeth yn awgrymu rhagor o risg. Mae'r risg hon

yn fwy oherwydd bod y clefyd gweithredol yn y boblogaeth hon yn ysgyfeintiol yn bennaf, ac o ganlyniad yn fwy heintus. Er bod lefel yr haint TB gweithredol yn isel yng ngorllewin Cymru, gallai oedi cyn cyflwyno mewn achosion heb eu hadnabod arwain at ragor o frigiadau a marwolaethau. O ganlyniad, rhaid cynyddu ymwybyddiaeth ymhlith y cyhoedd a gweithwyr gofal iechyd proffesiynol a chadw'r ymwybyddiaeth yn uchel. Mae hyn hefyd yn gymwys i weithwyr iechyd proffesiynol dan hyfforddiant.

(2) Dylai unrhyw frigiadau yn y dyfodol gael eu goruchwylio gan Iechyd Cyhoeddus Cymru o'r dechrau â gweithdrefn safonol benodol i TB ar gyfer dulliau o reoli brigiad a'i gofnodi. Yn y cyswllt hwn, mae angen diweddaru'r gweithdrefnau safonol presennol a pholisi'r tîm rheoli brigiad. Mae angen datblygu'r olaf ochr yn ochr â dulliau dadansoddi data modern a theipio WGS fel bod brigiadau'n cael eu hadnabod a'u hatal rhag lledaenu. Dylai rhwydweithiau cysylltiadau cynhwysfawr pob achos gael eu cofnodi'n electronig a'u plotio, a dylid dadansoddi rhwydweithiau cymdeithasol er mwyn sicrhau bod modd canfod cysylltiadau rhwng achosion yn gyflym ac yn rhwydd.

(3) Dylid gallu nodi cyllid ar gyfer brigiadau clefydau heintus ymlaen llaw fel bod modd rheoli brigiadau yn gyflym ac yn effeithiol heb orfod gwastraffu amser mewn trafodaethau.

(4) Mae'r gwasanaeth TB lleol wedi gwella ond mae rhai pethau'n anfoddhaol o hyd. Yn fwyaf arbennig, mae angen sefydlu trefniadau trawsgyflenwi ar gyfer gwyliau blynyddol, absenoldeb salwch ac absenoldeb astudio er mwyn sicrhau nad oes oedi cyn dechrau triniaeth. Mae angen gwella'r gefnogaeth fferyllol a'r

gefnogaeth weinyddol. Mae angen i waith cynllunio ar gyfer olyniaeth y Nyrs TB Arbenigol fod yn glir hefyd.

(5) Ar lefel genedlaethol, mae angen cefnogi Rhaglen yr Adolygiad Cohort â digon o gyllid ar gyfer pob bwrdd iechyd sy'n cyfrannu.

(6) Dylai Llywodraeth Cymru gefnogi Rhaglen yr Adolygiad Cohort a'r cynnig ar gyfer Manyleb Gwasanaeth Cenedlaethol sy'n cynnwys datblygu llwybr TB i fynd i'r afael ag oedi cyn cael diagnosis (e.e. ymchwilio i beswch sy'n para am fwy na thair wythnos).

(7) Nid yw'n ymddangos bod Cymru wedi paratoi'n briodol ar gyfer heriau mudwyr newydd, ffoaduriaid, a'r posibilrwydd o ymwrthedd i gyffuriau yn y dyfodol. Dylid cynnwys y ffactorau hyn mewn cynllun TB yn y dyfodol sy'n cael ei gefnogi a'i ariannu gan Lywodraeth Cymru.

Aelodau'r panel

Yr Athro Michael Morgan (Cadeirydd)

Meddyg ymgynghorol anadlol, Ymddiriedolaeth GIG Ysbytai Prifysgol Caerlŷr. Athro Anrhydeddus, Prifysgol Caerlŷr.

Alison Blake

Nyrs Arwain ar gyfer Gwasanaeth TB Cymunedol, Ymddiriedolaeth Sefydledig y GIG Partneriaeth Cernyw

Yr Athro Graham Bothamley

Athro Anrhydeddus a Meddyg Ymgynghorol, Ysbyty Prifysgol Homerton, Prifysgol y Frenhines Mary ac Ysgol Hylendid a Meddygaeth Drofannol Llundain

Yr Athro Onn Min Kon

Cadeirydd y Cydbwyllgor Twbercwlosis, Meddyg Ymgynghorol, Ysbyty'r Santes Fair, Llundain

Tracey Langham

Nyrs Diogelu Iechyd TB, Yr Uned TB Genedlaethol, Asiantaeth Diogelu Iechyd y DU

Dr Sophia Makki

Ymgynghorydd Iechyd y Cyhoedd, Uned Cyflawni Rhaglenedig (PDU), Asiantaeth Diogelu Iechyd y DU

Yr Athro Heather Milburn

Athro Meddygaeth Anadlol, Ymgynghorydd Anrhydeddus Ymddiriedolaeth GIG Guys a St Thomas

Dr Sally Millership

Cyn Ymgynghorydd mewn Rheoli Clefydau Trosglwyddadwy yn Public Health England, Chelmsford, Lloegr

Dr Esther Robinson

Pennaeth yr Uned TB ac Arweinydd Clinigol, Gwasanaeth Cyfeirio Mycobacterol Cenedlaethol, Asiantaeth Diogelu Iechyd y DU

Rhestr o'r dogfennau

Cofnodion y Tîm Rheoli Brigiad Tachwedd 2009 - Medi 2022

Cofnodion Bwrdd BIP Hywel Dda

Cofnodion Bwrdd Iechyd Cyhoeddus Cymru

Cofnodion Grŵp Gweithredu TB BIP Hywel Dda

Adroddiadau a dadansoddiad Dr Brendon Mason

Adroddiadau Mewnol ac Ôl-drafodaethau Iechyd Cyhoeddus Cymru

Adroddiadau Adolygiad Cohort Cenedlaethol Grŵp Cyflawni Anadlol Cymru

Cynnig ar gyfer Strategaeth Twbercwlosis a Manyleb Gwasanaeth ar gyfer Cymru 2021-2026

Adroddiad Blynyddol TB Cymru Gyfan 2019

Adroddiadau Brigiad Drafft 2011 a 2015

Crynodeb o Sefyllfa 2022 Iechyd Cyhoeddus Cymru

Cofnod o bresenoldeb yng nghyfarfodydd y brigiad

Adroddiad ar sgrinio cymunedol

Gorchmynion sefydlu statudol ar gyfer Iechyd Cyhoeddus Cymru a BIP Hywel Dda 2009

Adran Microbioleg Iechyd Cyhoeddus Cymru. Adroddiad Biowybodeg. Dadansoddiad WGS o arunigion yn gysylltiedig â Llwynhendy.

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https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1055985/TB_Quarterly_Reports_SOP_v2.2.pdf

Tuberculosis in England 2021 report
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1064395/TB_annual-report-2021.pdf

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https://phw.nhs.wales/news/tuberculosis-in-wales-annual-report-2019/#:~:text=A%20new%20report%20published%20by,generally%20been%20declining%20since%202009.

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Diolchiadau

Mae'r Panel yn ddiolchgar iawn am y gefnogaeth weinyddol a ddarparwyd gan Iechyd Cyhoeddus Cymru a Bwrdd Iechyd Prifysgol Hywel Dda. Hoffem ddiolch yn arbennig i Carly Smith (Cynorthwyydd Gweithredol Prif Weithredwr Iechyd Cyhoeddus Cymru), Alessandro Di'Ronato (cyn Reolwr Rhaglenni Iechyd Cyhoeddus Cymru), Harveen Chitra, Louise Hunt, Donna Edwards (Cydlynydd Effeithiolrwydd Clinigol, Cyfarwyddiaeth Feddygol BIP Hywel Dda) a Karis Jones (Rheolwr Rhaglenni Iechyd Cyhoeddus Cymru) am eu cymorth amhrisiadwy.

Mae'r Panel hefyd yn falch ei fod wedi cael cyfle i siarad â llawer o bobl a fu'n ymwneud â rheoli'r brigiad ac arbenigwyr eraill sydd wedi rhoi gwybodaeth werthfawr i ni. Mae enwau rhai o'r rhain i'w gweld isod:

Yr Athro Phil Kloer

Dr Brendon Mason

Dr Carol Llewellyn Jones

Dr Gareth Collier

Yr Athro Kier Lewis

Kelly Goddard

Dr Ian Campbell

Brendon Scott a'r Athro Al Story

Dr Simon Barry

Dr Quentin Sandifer

Dr Mark Temple

Adolygiad Allanol o'r Brigiad o Achosion o Dwbercwlosis yn Llwynhendy

Cylch Gorchwyl

1. Cwmpas

1.1 Cafodd brigiad o achosion o *M. tuberculosis* (TB) â'i ganolbwynt yn ward etholiadol Llwynhendy yn Sir Gaerfyrddin, yng ngorllewin Cymru, ei ddatgan am y tro cyntaf ym mis Tachwedd 2010. Ers hynny mae tîm rheoli brigiad wedi'i agor a'i gau dair gwaith. Ym mis Tachwedd 2018 cafodd y tîm ei alw ynghyd eto am y pedwerydd tro. Erbyn hyn mae dull gweithredu fesul cam ar gyfer sgrinio cymunedol wedi'i gyflwyno, ac mae'r gwaith yn parhau.

1.2 Mae Byrddau Iechyd Cyhoeddus Cymru a Bwrdd Iechyd Prifysgol Hywel Dda yn dymuno archwilio a yw'r brigiad wedi cael ei reoli yn y ffordd orau posibl, gan gynnwys a ddylid bod wedi ymestyn y broses olrhain cysylltiadau yn gynharach, a ddarparwyd y gofal clinigol gorau posibl i achosion, ac a wnaeth y rhain effeithio ar faint ac effaith y brigiad.

1.3 Mae Iechyd Cyhoeddus Cymru a Bwrdd Iechyd Prifysgol Hywel Dda wedi cytuno i gomisiynu adolygiad allanol annibynnol ar y cyd i archwilio'r cwestiynau hyn yn ogystal â nodi'r gwersi a ddysgwyd o'r ymateb i'r brigiad hwn a darparu sicrwydd ynglŷn â'r trefniadau presennol.

1.4 Bydd yr adolygiad yn ymdrin â rheoli'r brigiad o fis Tachwedd 2010, pan gafodd y brigiad ei ddatgan am y tro cyntaf, tan 'nawr (Awst 2021), er mwyn nodi'r camau sydd wedi cael eu cymryd mewn ymateb i wersi a ddysgwyd.

2. Diben

2.1 Diben yr Adolygiad yw archwilio:

- A oedd y dull o reoli'r brigiad er 2010 yn gyffredinol, ac yn ystod pob cyfnod, yn unol â'r canllawiau ymarfer da a oedd mewn grym ar adeg pob cyfnod o'r brigiad (gan gyfeirio at strategaethau cenedlaethol, strategaethau mewn rhannau eraill o'r DU, canllawiau Sefydliad Iechyd y Byd, cynlluniau, canllawiau a phrotocolau a gweithdrefnau sefydliadol);

- Effeithiolrwydd rhan berthynol Iechyd Cyhoeddus Cymru a Bwrdd Iechyd Prifysgol Hywel Dda yn y gwaith o reoli'r brigiad a thrin achosion cudd neu weithredol o TB yn ystod pob cyfnod (gan gynnwys y cyfnod presennol) gan gynnwys y bobl a'r adnoddau ariannol a ddarparwyd gan y naill sefydliad a'r llall mewn ymateb i'r brigiad er mwyn atal achosion o drosglwyddo'r clefyd a thrin achosion o TB a gafodd eu hadnabod;

- Y trefniadau llywodraethu (gan gynnwys adrodd ac uwchgyfeirio) ar gyfer hysbysu Timau a Byrddau ynglŷn â'r brigiad a rhoi sicrwydd i Fyrddau pob sefydliad;

- Adolygiad o unrhyw achosion y rhoddir gwybod amdanynt o: 1. Pobl a nodwyd yn ystod y brigiad sydd wedi marw, ac y nodir ar y dystysgrif marwolaeth bod TB wedi cyfrannu tuag at y farwolaeth neu ei hachosi, a 2. Pobl sydd wedi datblygu TB gweithredol;

- Effeithiolrwydd unrhyw bolisi/polisïau sy'n berthnasol i atal, trin a rheoli achosion o TB, gan gynnwys rheoli brigiadau, a oedd yn gymwys yng Nghymru ym mhob cyfnod o'r brigiad a'r trefniadau adrodd yng Nghymru ers datgan y brigiad am y tro cyntaf yn 2010;

- Effeithiolrwydd cyngor arbenigol allanol a geisiwyd ac a gafwyd, gan gynnwys cyswllt â sefydliadau eraill, er enghraifft Public Health England (ac Asiantaeth Diogelu Iechyd y DU o fis Hydref 2021 ymlaen) neu Gymdeithas Thorasig Prydain.

2.2 Dylai'r adolygiad nodi gwersi a ddysgwyd a gwneud argymhellion ar gyfer gwella i Iechyd Cyhoeddus Cymru a Bwrdd Iechyd Prifysgol Hywel Dda. Mae'n bosibl y bydd argymhellion i randdeiliaid allweddol eraill hefyd.

3. Adrodd ac Atebolrwydd

3.1 Y Cyfarwyddwr Meddygol Gweithredol yn Iechyd Cyhoeddus Cymru a'r Cyfarwyddwr Meddygol Gweithredol ym Mwrdd Iechyd Prifysgol Hywel Dda fydd Noddwyr Gweithredol ar y cyd yr adolygiad ac maent yn atebol i'w Byrddau am gyflawni adroddiad(au) yr Adolygwyr.

3.2 Blaenoriaeth y ddau sefydliad ar hyn o bryd yw parhau i reoli'r brigiad a pheidio â thynnu sylw neu gyfeirio adnoddau oddi wrth yr amcan hwn.

3.3 Hoffai'r noddwyr i'r adolygiad symud ymlaen yn gyflym, ac maent yn gobeithio cael adroddiad(au) interim gan yr Adolygwyr erbyn diwedd mis Chwefror 2022 (dangosol) gyda'r bwriad o gael trafodaeth gychwynnol gyda Chadeiryddion y Byrddau a Phrif Weithredwyr y ddau sefydliad cyn i adroddiad terfynol gael ei gyflwyno a'i roi gerbron y Byrddau perthynol cyn mis Mai 2022 ar yr hwyraf, ac eithrio adroddiad i QSIAC erbyn diwedd mis Mawrth.

3.4 Bydd y Noddwyr Gweithredol yn paratoi SBAR ar y cyd i'r Byrddau perthynol i gefnogi adroddiad terfynol y panel adolygu.

3.5 Efallai y byddai'r Adolygwr/Adolygwyr yn hoffi sefydlu grwpiau gorchwyl a gorffen byr ar faterion penodol sy'n rhan o'r ymchwiliad yn ôl y galw, er enghraifft, grŵp adolygu marwolaethau, a bydd y ddau sefydliad yn rhoi ystyriaeth resymol i geisiadau am unrhyw adnoddau angenrheidiol cysylltiedig.

3.6 Bydd tîm y Prosiect Adolygu yn adrodd yn rheolaidd (misol) ar gynnydd yr adolygiad i'r Noddwr Gweithredol a'r Tîm Gweithredol ym mhob sefydliad.

3.7 Os caiff materion eu nodi, yn ystod yr Adolygiad, sydd angen sylw ar unwaith ac ar frys ar sail iechyd y cyhoedd neu ansawdd a diogelwch gofal clinigol, byddant yn cael eu cyfeirio, yn y lle cyntaf, i sylw Noddwyr Gweithredol yr Adolygiad i benderfynu a oes angen camau brys.

4. Aelodaeth o dîm yr adolygiad

4.1 Disgwylir i'r Adolygwyr gynnwys:

- Uwch arbenigwr iechyd y cyhoedd ag arbenigedd mewn diogelu iechyd, gan gynnwys rheoli brigiad o achosion ac, yn ddelfrydol, yn gallu dangos gwybodaeth am dwbercwlosis fel mater iechyd y cyhoedd.
- Uwch arbenigwr meddygaeth anadlol ag arbenigedd mewn twbercwlosis.
- Nyrs arbenigol anadlu ag arbenigedd mewn twbercwlosis.
- Uwch ficrobiolegydd ag arbenigedd mewn diagnosio TB ac arbenigedd mewn microbioleg iechyd y cyhoedd.
- Aelod Lleyg: Cynrychiolydd lleyg annibynnol o sefydliad cenedlaethol sydd â diddordeb mewn trin a rheoli twbercwlosis a chanlyniadau cleifion.

Caiff y panel adolygu ei gadeirio gan yr Athro Mike Morgan, cyn Gyfarwyddwr Clinigol Cenedlaethol ar gyfer Clefydau Anadlol yn GIG Lloegr.

5. Adnoddau i gefnogi'r adolygiad

Bydd y sefydliadau sy'n comisiynu yn cytuno ar gais rhesymol gan yr adolygwyr am adnoddau, dynol ac fel arall, sydd eu hangen i gyflawni'r adolygiad. Disgwylir y bydd hyn yn cynnwys mynediad i safleoedd a chyfleusterau perthnasol i gynnal gweithgareddau angenrheidiol (cyfarfodydd ac ati); cefnogaeth weinyddol i helpu i adennill a rheoli dogfennau, trefnu cyfweliadau, a pharatoi (a) adroddiad(au); adennill a pharatoi cofnodion achosion i gefnogi adolygiad o farwolaethau; a rheoli prosiect er mwyn cyflawni'r adolygiad.

Caiff tîm prosiect ei sefydlu i gefnogi'r panel adolygu. Bydd tîm yn cael ei arwain gan Reolwr Prosiect a bydd yn cynnwys cefnogaeth weinyddol, Cyfathrebiadau a Thechnoleg Gwybodaeth a Chyfathrebu. Bydd Cadeirydd y Panel Adolygu yn gweithio mewn cysylltiad agos â Thîm y Prosiect er mwyn sicrhau cefnogaeth ddigonol i'r adolygiad ac i aelodau'r panel adolygu.

6. Cyfathrebu a chyhoeddi canfyddiadau'r adolygiad

6.1 Caiff yr adolygiad ei gynnal fel rhan o ddyletswydd gonestrwydd gyfreithiol Iechyd Cyhoeddus Cymru a Bwrdd Iechyd Prifysgol Hywel Dda,

ac yn unol â hynny caiff y canfyddiadau eu cyfathrebu a'u rhannu mewn ffordd agored a thryloyw.

6.2 Caiff Strategaeth Gyfathrebu ar y cyd ei chytuno gan Iechyd Cyhoeddus Cymru a Bwrdd Iechyd Prifysgol Hywel Dda, a fydd yn diffinio'r broses gyfan o sefydlu'r adolygiad i gyhoeddi'r canfyddiadau.

6.3 Bydd y Strategaeth Gyfathrebu yn cynnwys ystyriaeth o anghenion rhanddeiliaid allweddol, gan gynnwys aelodau o'r cyhoedd, unigolion a theuluoedd sy'n cael eu heffeithio'n uniongyrchol, Llywodraeth Cymru, Byrddau Iechyd, Cynghorau Iechyd Cymuned ac Awdurdodau Lleol.

6.4 Bydd Cynllun Cyfathrebu ar y cyd yn cynnwys manylion am gynlluniau i'w cyhoeddi, gan gynnwys llinellau amser dangosol ar gyfer cyfarfodydd cyhoeddus a chyfarfodydd â'r rhai hynny sydd wedi cael eu heffeithio'n uniongyrchol. Lle bo angen, gwneir cyswllt cynharach ag unigolion a theuluoedd sy'n cael eu heffeithio.

Hywel Dda TB External Review Findings
ACTION PLAN

26h January 2023

The Health Board will establish a TB External Review Findings Oversight Group to address each recommendation made in the External Review Report.

Action number	Recommendation	Action	By Whom	By When
1.0	The outbreak has not yet concluded and the high level of latent TB infection in the population implies further risk. This risk is heightened because the active disease in this population is predominantly pulmonary and therefore more infectious. Although the level of active TB infection is low in West Wales, delayed presentation in unrecognised cases may lead to further outbreaks and deaths. The level of awareness amongst the public and their health care professionals must be therefore increased and maintained. This also applies to trainee health professionals.	To manage the risk of the outbreak and raise awareness amongst the public and Healthcare Professionals, to reduce the risks of any future outbreaks.	PHW to lead PHW/DoPH Comms	June 2023

2.0	Any future outbreaks should be overseen by PHW from the outset with a TB -specific standard operating procedure for the conduct and recording of outbreak management. The current SOP and OCT policy needs to be updated in this respect. The latter needs to be developed alongside modern data analysis and WGS typing so that outbreaks are identified and contained. Comprehensive contact networks of all cases should be recorded electronically and plotted with social network analyses undertaken to ensure links between cases are uncovered quickly and easily.	To work with PHW to create a Standard Operating Procedure and updated OCT policy. Development of a revised methodology for managing contact networks and analyses to ensure links between cases are uncovered quickly and easily.	PHW to lead PHW/ TB Service	July 2023
3.0	Funding should be identifiable ahead of time for outbreaks of infectious diseases so that such outbreaks can be managed in a timely and effective manner without the need for time-wasting discussion.	To develop an agreed service model and contingency plans for resourcing any future outbreak	PHW to lead Service Delivery Manager/ Finance/ TB Clinical Lead	July 2023
4.0	The local TB service has improved but still has inadequacies. In particular, cross-cover arrangements need to be in place for annual, sick and study leave in order to prevent delays in treatment. Pharmacy and administrative support needs improvement.	Development of a resilience plan for both future outbreaks and maintaining current TB case management. Agree a plan for Pharmacy, administrative and Specialist nursing support required for TB management.	HDUHB to lead Service Delivery	June 2023

	Succession planning for the TB Specialist Nurse also needs to be clear		Manager / TB Clinical Lead	
5.0	At a national level, the Cohort Review Programme needs to be supported with adequate funding for each contributing health board.	To agree a plan with WG, other HB's & External Partners to agree an adequate funding model	PHW to lead PHW/ WG	To be confirmed
6.0	Welsh Government should support both the Cohort Review Programme and the proposal for a National Service Specification that includes the development of a TB pathway to tackle delayed diagnosis (e.g. investigating cough lasting longer than three weeks).	To work with WG and PHW to agree a way forward for the cohort Review Programme and the National Service Specification	PHW to lead WG/ PHW	To be confirmed
7.0	Wales does not seem to be properly prepared for the challenges of new migrants, refugees, and the occurrence of future drug resistance. These factors should be included in a future TB plan supported and funded by Welsh Government.	To work with WG and at an All Wales level to agree a TB Plan which addresses the shortfalls highlighted for new migrants, refugees and the occurrence of future drug resistance.	PHW to lead WG/ PHW/ DoPH/ TB Clinical Lead	To be confirmed

Appendix B

Outbreak of TB in Llwynhendy: External Review Recommendations

PHW ACTION PLAN

V0f 18 Jan 2023

General response

Public Health Wales (PHW) welcomes the findings of the independent review into the response to the outbreak of Tuberculosis (TB) centred around Llwynhendy, Carmarthenshire. PHW accepts the recommendations of the review in full and we have developed this action plan (jointly with Hywel Dda University Health Board) to address these.

We recognise the challenges outlined by the review of working across systems to effectively manage outbreaks of TB. Such outbreaks are complex because of the elaborate social networks and often extended timescales involved, resulting in cases presenting many months or indeed years later. Reflecting back over a decade, it is encouraging that the review has identified the progress and organisational learning over recent years in our approach to managing the outbreak, whilst also recognising there is scope for further development.

The findings of the review are a fair reflection of the ongoing need to ensure safe clinical services, public health leadership, and strategic direction through government policy for the management of TB in Wales. As such, the recommendations highlight where PHW, working with other organisations need to focus on internal processes as well as where we should be improving on our collaborative working.

PHW takes its responsibility to protect the health of people in Wales very seriously. Applying and sharing learning from the external review, we will continue to provide systems leadership in response to TB in Wales and ensure our processes reflect the latest practices and evidence. We will work with our partners to maintain and strengthen our commitment to raising awareness of the risks from TB on a population level as well as amongst health professionals, particularly with Primary Care Services.

Whilst PHW does not provide direct clinical services for TB in Wales, we will continue to support Health Boards through the TB cohort review process, recognising that this is a vital focal point to share learning and influence strategy. We have a designated TB Lead in our Health Protection Team who will have an important role to take this forward for PHW.

Through our regular health protection situation report, we will continue to inform our Executive Team and Board of significant incidents and outbreaks and outline the actions we are taking to control transmission. We will also review the findings of the internal review undertaken in 2019 to ensure that any actions not covered by the

recommendations of the external review are reviewed and implemented where necessary.

On a wider scale we will work with government to provide specialist public health expertise to shape the future approach to TB in Wales, and ensure we collaborate with partners beyond our borders.

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Recommendation		Response	Action	Lead	By When
1	The outbreak has not yet concluded and the high level of latent TB infection in the population implies further risk. This risk is heightened because the active disease in this population is predominantly pulmonary and therefore more infectious. Although the level of active TB infection is low in West Wales, delayed presentation in unrecognised cases may lead to further outbreaks and deaths. The level of awareness amongst the public and their health care professionals must be therefore increased and maintained. This also applies to trainee health professionals.	PHW already contributes to training of healthcare professionals through input into medical and nursing student training, postgraduate training (including for junior doctors), taught courses (e.g. MPH), as well as supporting training for other professionals including Environmental Health Officers through the Lead Officer training programme. All of these provide opportunity to raise the profile of TB.	PHW will continue to work with other partners to improve awareness of TB amongst the public and healthcare professionals, particularly with Primary Care Services in affected areas, including trainees, drawing on input from clinicians, public health specialists, communications specialists and behavioural scientists, amongst others.	Director of Health Protection, PHW	June 2023
2	Any future outbreaks should be overseen by PHW from the outset with a TB -specific standard operating procedure for the conduct and recording of outbreak management. The current SOP and OCT policy needs to be updated in this respect. The latter needs to be	The current PHW SOP outlines the general approach to TB cases and indicates when escalation to an OCT is required. This will be strengthened to ensure the TB-specific considerations and expectations of an OCT are explicit. These are already	PHW will work with HD UHB and other key partners to create a Standard Operating Procedure and updated OCT policy for the management of TB outbreaks and incidents. PHW will work with HDUHB and other partners to develop an SOP that is TB-specific and	Director of Health Protection, PHW	July 2023

	developed alongside modern data analysis and WGS typing so that outbreaks are identified and contained. Comprehensive contact networks of all cases should be recorded electronically and plotted with social network analyses undertaken to ensure links between cases are uncovered quickly and easily.	outlined in general terms in the Communicable Disease Outbreak Control Plan for Wales and include the communication and sharing of information with local health care services when an outbreak is identified, to ensure that affected communities are well informed of the symptoms of TB and what to do if they are experiencing symptoms.	makes references to the generic outbreak control plan and procedures on data management, network analysis and diagnostics (including whole genome sequencing). It will also include the development of a revised methodology for managing contact networks and analyses to ensure links between cases are uncovered quickly and easily.		
3	Funding should be identifiable ahead of time for outbreaks of infectious diseases so that such outbreaks can be managed in a timely and effective manner without the need for time-wasting discussion.	Responsibility for assessing and screening contacts sits with Health Boards as a matter of routine. As such, PHW role is in providing leadership to the outbreak response, health protection expertise, and coordination of any communication. Additionally, PHW has a CCDC with a lead role for TB, providing public health leadership across Wales. Other resources include those required for undertaking specific and mass community screening and helplines and	PHW will advocate for future revisions to the All Wales Communicable Disease Outbreak Plan to consider how financial resourcing is agreed amongst partners.	Deputy Director of Health Protection and Screening Services, PHW	July 2023

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		communications. This is not specific to TB and includes response to other communicable diseases.			
4	The local TB service has improved but still has inadequacies. In particular, cross-cover arrangements need to be in place for annual, sick and study leave in order to prevent delays in treatment. Pharmacy and administrative support needs improvement. Succession planning for the TB Specialist Nurse also needs to be clear		HD UHB to lead		
5	At a national level, the Cohort Review Programme needs to be supported with adequate funding for each contributing health board.		PHW and HDUHB in collaboration with other key partners will work with Welsh Government and other health boards to agree the framework for ensuring the Cohort Review Programme is a central part of a TB strategy to reduce the incidence of tuberculosis in Wales. PHW will continue to support the cohort review through provision of epidemiological data and health protection input.	Director of Health Protection, PHW	To be confirmed

Appendix B

6	Welsh Government should support both the Cohort Review Programme and the proposal for a National Service Specification that includes the development of a TB pathway to tackle delayed diagnosis (e.g. investigating cough lasting longer than three weeks).	PHW's TB Lead submitted a proposal to Welsh Government for a TB strategy and Service Specification in 2021. This will form a firm foundation for developing a strategic approach to tackling TB in Wales in the future.	PHW and HDUHB in collaboration with other key partners will work with Welsh Government to agree the framework for ensuring that a national service specification for TB is a central part of a TB strategy to reduce the incidence of tuberculosis in Wales.	Director of Health Protection, PHW	To be confirmed
7	Wales does not seem to be properly prepared for the challenges of new migrants, refugees, and the occurrence of future drug resistance. These factors should be included in a future TB plan supported and funded by Welsh Government.	PHW's TB Lead submitted a proposal to Welsh Government for a TB strategy and Service Specification in 2021. This will form a firm foundation for developing a strategic approach to tackling TB in Wales in the future. PHW has been supporting the Wales response to the crisis in Ukraine. We have established a TB screening and laboratory diagnostic service to offer testing for active and latent TB amongst refugees from Ukraine. The outcomes are reported regularly through a dedicated surveillance programme.	PHW and HDUHB in collaboration with other key partners will work with Welsh Government and other health boards to agree the framework for a TB strategy and action plan to reduce the incidence of tuberculosis in Wales, including addressing the needs of under-served populations. Owing to the migratory nature of some underserved groups and recognising that TB does not respect administrative borders, we will work across the four nations in the UK to ensure any strategy complements those in other nations.	Director of Health Protection, PHW	To be confirmed