


RESEARCH ARTICLE

‘In constant fear of some dire epidemic breaking out’: Rural responses to infectious and epidemic disease, 1870–1920

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Abstract

Based on extensive archival research encompassing over eighty rural authorities in Wales, this essay pieces together fragmentary evidence to reveal the main contours of rural responses to infectious outbreaks from the 1870s to the 1918/10 influenza pandemic. At the centre of the essay are those practical, short-term measures that have hitherto been overlooked in the historiography. While infectious outbreaks did have the capacity to extend sanitary initiatives over the medium and long term, looking at how rural authorities reacted to infectious disease helps us better understand how public health practices translated into action at a local level. In doing so, the essay untangles both the nature of rural responses and the challenges confronted by rural sanitary officials when confronted with infectious outbreaks and how they had to adapt public health orthodoxy to different rural environments.

Introduction

Following an outbreak of ‘fever’ in Llangadog, Carmarthenshire, in 1895, a journalist for the *Western Mail* visited the village to interview the inhabitants. Drawing on the techniques of New Journalism, the *Western Mail* explained how fever was a regular visitor: ‘We have had cases every year for the last eight or nine years, increasing in numbers, too, every year’ explained one inhabitant. The result, as the journalist reported, was a mixture of indifference and frustration. For some, an attitude of ‘What is to be will be’ prevailed, while others complained of the impossibility of rousing ‘our public men to a sense of their duty’. When the journalist asked what steps were being taken by the rural district council to protect the villagers, another inhabitant interviewed replied ‘None at all’.¹ Two years later, the *North Wales Chronicle* complained how in Llanrwst rural district ‘an ignorance as to the preventive treatment of infectious cases’ was prevalent.² Although complaints about the apathy of local administrators and sanitary officials were a recurrent feature of writing on public health, reports that frame rural authorities and communities as passive or ignorant, if taken at face value, suggest at best a lacklustre response to outbreaks of ‘fever’ and other infectious diseases.³

A more optimistic reading might suggest that responses to ‘fever’ in late nineteenth century Llangadog and Llanrwst reveal how rural communities were less familiar with the challenges presented by infectious diseases compared to towns and cities, who bore a heavier burden of epidemics and contagious illnesses.⁴ However, rural areas still grappled with waterborne and other infectious diseases despite seemingly being insulated from the worst effects of national epidemics. Until the 1918/19 influenza pandemic, many of these outbreaks were localized but nonetheless held significant consequences for the affected community and the corresponding rural authority.

Responses to these outbreaks were also inherently local, influenced by the spatial and socio-economic dynamics of each locality and rural authority in which they occurred. Rather than Llangadog and Llanrwst standing in as exemplars of how rural authorities viewed 'fever', they prompt questions about how Victorian and Edwardian rural authorities responded to infectious outbreaks and how much their responses differed from those in towns and cities. As Amanda Power, Iva Pesa, and Eiko Honda remind us in the context of Covid-19, it is important to consider such local experiences rather than solely focus on the national or global if we are to understand the different scales of action and reaction to disease outbreaks that includes the rural as much as it does the experiences of large cities.⁵

A large body of scholarship has explored the role waterborne diseases like cholera and typhoid had in shaping public health, with more recent studies considering how surveillance, disinfection, isolation, and their links to Liberal governance underpinned preventative public health after 1870.⁶ Studies of epidemic diseases, such as cholera or influenza, have shed light on the medical and social construction of infectious diseases to consider how governments, medical officials, the press, and provincial and metropolitan urban authorities responded.⁷ Encouraged by this work, historians have rejected an overarching modernizing trajectory to consider instead the local dynamics of public health. However, existing studies tend to flatten out experiences and discount public health in rural communities as a 'post-urban afterthought'.⁸ The result is that we know relatively little about how market towns and villages tackled epidemics or infectious disease. When they are considered, rural authorities are generally characterized as more concerned with saving ratepayers money than with implementing sanitary reforms, with existing English case studies suggesting that market towns were either plunged into crisis or reluctant to take action in the face of disease outbreaks.⁹

Where elsewhere I have challenged the idea that rural authorities were ignorant, lazy, or backwards, here my attention shifts from considering the nature of sanitary reform to bring to light the previously disregarded reactions of rural authorities to infectious outbreaks.¹⁰ As such, the essay is not concerned with mapping patterns of disease in rural Wales. Nor is the focus on the supervision exercised by the Local Government Board (LGB) – the central body responsible for public health administration in England and Wales – or how rural public health intersected with the broader national culture of professional association, both of which as this essay suggests were distant from the work of rural authorities on the ground. Instead, I focus on the experiences of rural authorities from their creation in 1872 to the establishment of the Ministry of Health in 1919 to examine how they responded to infectious diseases in the first few days and weeks following an outbreak. In doing so I piece together fragmentary archival evidence from over eighty rural authorities in Wales to provide insights into the specificities of responses to infectious outbreaks that goes beyond a 'top-down' approach.¹¹ While recognizing the heterogeneity of rural districts, taken together their experiences reveal how public health practices were negotiated and played out in rural districts. At the centre of the essay are four main areas – investigation, immediate efforts to clean up the environment, disinfection, and isolation. These areas represented the main responses to epidemics and infectious disease, notably typhoid and typhoid (enteric) fevers, smallpox, scarlet fever, and diarrhoeal diseases that continued to dominate public health activity in the period. In examining these areas, the essay offsets two absences in the existing literature: the first relates to rural areas; the other to Wales.

Although a sanitationist programme of environmental cleanliness continued to be an important component of rural public health work into the twentieth century, infectious disease control changed from 1870 onwards, changes which Graham Mooney suggests only partly reflected how 'the diseases themselves came to be scientifically and popularly understood'.¹² A different type of infrastructure for controlling outbreaks through the allied practices of notification, isolation, and disinfection was added.¹³ Attention to these infrastructures can tell us much about how public health practices translated into action at a local level in rural districts, especially as such practices remained piecemeal and malleable, dependent on the context of the district or local circumstances. Similarly,

by shifting perspective from the city to the countryside, we can untangle the challenges confronted by rural officials who, while they encountered some of the same obstacles to intervention seen in provincial urban authorities, had to adapt public health practices to rural environments.

The first section of essay outlines the management of rural public health to highlight the limitations that structured rural authorities' responses to infectious disease and the role played by different sanitary officials. As the following sections show, although identification of the causes of disease outbreaks was not always straightforward to determine in rural districts, environmentally focused measures directed at cleaning up the rural environment and improving rural housing continued to dominate responses in the first few days and weeks of an outbreak into the Edwardian period. Subsequent sections first reveal how new practices and technologies in the form of disinfection and isolation were adopted before examining how their deployment was often problematic in rural districts given the material realities of rural housing. The concluding section turns to the 1918/19 influenza pandemic. With Wales overlooked in official reports and in the existing literature, this final section charts the pandemic's impact on rural districts in Wales before revealing how responses to influenza in 1918/19 need to be contextualized within the longer trajectory of rural authorities' reactions to infectious disease. The pattern that emerges is at odds with existing studies which suggest that infectious outbreaks could plunge rural authorities and market towns into crisis.¹⁴ Instead, although there are clear similarities with provincial urban districts – barriers to notification, an environmental and embodied approach to determining the causes of an outbreak, the removal of environmental factors, and the deployment of new practices and technologies – significant differences emerge. These differences determined the scope and nature of rural responses. They ranged from the difficulties of responding to outbreaks in hard-to-reach, isolated communities to the generally poor quality of rural housing, which significantly limited opportunities for disinfection and isolation. Rural authorities and their officials faced different legislative, topographical, and material realities that created obstacles not encountered in provincial and metropolitan urban districts.

Managing the rural environment

Until 1872, the administration of rural areas was viewed as 'a chaos as regards authorities, a chaos as regards rates, and a worse chaos than all as regards areas'.¹⁵ Preceded by nearly a decade of deliberation over how to fit sanitary administration into the existing structure of rural local government, under the 1872 Public Health Act sanitary legislation was applied to rural areas. A new administrative tier was created through the establishment of rural sanitary authorities (RSAs). These new authorities were intended to reverse the 'defective sanitary government' that had characterized rural districts, and it was their work that set the parameters of public health in the district they covered. They quickly appointed medically qualified medical officers of health (MOHs) and over the next two decades intruded more obviously and continuously in public health.¹⁶ These authorities were succeeded following the creation of rural district councils (RDCs) under the 1894 Local Government Act, but as the new bodies responsible for rural public health there was considerable continuity between their work and that of their predecessors.

Both bodies reported to the LGB. As Sally Sheard demonstrates, the creation of the LGB in 1871 increased knowledge of provincial public health, which in turn influenced the expectations of central government.¹⁷ The Board exercised a certain measure of control and provided guidance, undertaking investigations of specific localities when outbreaks of infectious disease were reported. However, as a body the LGB and its officials were often overwhelmed. Nor was the Board always able to provide the leadership or support local authorities looked for. With the number of central inspectors small, most of the Board's time was taken up with municipal authorities in England, ensuring that the LGB's involvement in managing rural disease outbreaks remained limited. For instance, LGB officials visited Pembrokeshire only three times in response

to disease outbreaks between 1871 and 1900.¹⁸ For many rural authorities, the Board was a passive, distant body; its presence mainly felt through circulars or in requests for reports.¹⁹ It could take months for a LGB inspector to arrive to investigate an outbreak while their assessments were invariably retrospective, an outsiders' perspective that focused on the remedial environmental work needed to prevent future outbreaks.

When it came to Wales, long-standing English conceptions of the Welsh as backwards were embedded in their reports, while in their correspondence with Welsh authorities the Board's officials easily slipped into being condescending. They regularly used words like 'primitive' when writing about Welsh villages or 'stupid' when referring to local officials. Internal correspondence on Newton RSA, Glamorganshire, for example, reminded those at the Board that they needed to 'bear in mind the difference between districts like this, of a very primitive and purely agricultural nature' and more 'superior' urban areas.²⁰ Centralized supervision was hence often limited or framed in ways that Welsh rural authorities found condescending or unhelpful during a period when, as Keith Snell explains, '[t]he central authorities always had great difficulties in convincing people in Wales' who resisted 'the intrusion of London men and London methods'.²¹ Given the powerful libertarian rhetoric constructed around local authority, and the historic antipathy to central government in Wales, many rural Welsh authorities claimed they were in a better position to understand outbreaks and their causes than an outsider.²² Likewise, the Board framed many questions of rural sanitation as purely of local concern, encouraging rural authorities to take responsibility. In market towns, villages, and hamlets, responsibility for managing disease outbreaks therefore rested with rural authorities and their sanitary officials.

While circulars from the LGB, articles in the sanitary press, and regional meetings of the Society of Medical Officers of Health or Sanitary Inspectors' Association offered opportunities for rural officials to keep up to date with the latest developments, the 1872 Act and 1875 Public Health Act, which consolidated sanitary legislation, gave rural districts fewer powers than urban sanitary districts. Rural medical officers were conscious of these reduced powers and felt frustrated by the restrictions they faced.²³ In addition, while rural districts encountered the same barriers to sanitary reform that Hennock, Wohl, and Hamlin identify for municipal boroughs they experienced them more acutely.²⁴ For instance, where all local authorities struggled for proper resourcing, in rural Wales low population densities, the structural problems associated with rural depopulation, along with the decline of small rural industries, saw high levels of outmigration, leading to a smaller ratepayer base and increased levels of rural poverty. Under these conditions, rural authorities not only faced health problems associated with poverty but also had more limited resources to tackle poor sanitation or housing.²⁵ Nigel Richardson in his study of typhoid in Uppingham highlights this problem of revenue but goes on to suggest that those responsible for rural public health also lacked the political skill to push through improvements.²⁶ Yet rural responses to infectious disease were not just determined by individuals, a small (and often part-time) sanitary staff, local politics and the conflicting interests of different communities, or struggles for proper resourcing. The size of rural districts and the isolated nature of many communities within them created barriers to detecting and managing outbreaks not encountered in urban sanitary districts.

Writing about Llŷn RDC in Caernarvonshire in 1914, the LGB noted that the sanitary officials were 'handicapped' given 'the scatted distribution of the people and the large area of the district . . . Consequently, work is made laborious on account of the large area and hilly character' of the district.²⁷ While such conditions did mean that disease outbreaks were often confined, rural authorities had fewer personnel for large areas. In Narberth rural district in Pembrokeshire, for example, one sanitary inspector was responsible for 55,391 acres in the north of the district, with the other covering 24,843 acres in the south. The latter 'lived in the extreme west of the district where there was no railway connection forcing him to undertake a great part of his duties on foot'. This ensured 'that it takes him a very long time to visit the remote places in his district, and in wintertime, very little work can be done in a day'.²⁸ Distance and landscape mattered in ways not

experienced by officials in better resourced urban authorities. While these barriers provide a context for rural responses to disease outbreaks, this did not mean that rural authorities were unable to act. As examined elsewhere, rural authorities invested in sanitary projects and in the day-to-day policing of the environment. However, they did so at a pace and extent that reflected the nature of rural communities, their environment, and the resources available.²⁹ What was at issue was not neglect or inactivity, only that the nature and scale of action was constrained by the legislative, physical, and material realities in which rural authorities and their sanitary officials operated.

A conventional narrative would highlight the role of medical officers of health in determining the nature of action at a local level. The LGB expected them to prepare a report on the distribution and spread of the outbreak, provide details of the associated sanitary conditions, and recommend action to the sanitary authority for approval. However, these expectations often did not match practice in rural districts. Unlike their municipal counterparts, many rural MOHs were part-time, combining their public health duties with private practice and other posts. Most were comparatively poorly paid. In Ystradgynlais rural district in Breconshire in mid-Wales, for example, the MOH Evan Lloyd was also district medical officer for the Poor Law and public vaccinator. With an extensive private practice, he was candid that 'for so small a salary he cannot afford to be very active in sanitary matters'. Brecknock RDC medical officer 'often hesitated to trouble' given his poor salary.³⁰ While not all rural MOHs conform to this pattern – some were highly active – it did mean that they could play a marginal role in the administration of their district. In Narberth RDC in Pembrokeshire, for instance, the three MOHs 'do hardly more than take note of defects that come under their observation in the course of their daily visits'. Much of the work was therefore left to the two sanitary inspectors.³¹

As Hamlin has shown, while sanitary (nuisance) inspectors may have represented 'the bottom layer of local public health administration', they were important agents of public health in English towns. In rural Wales, sanitary inspectors were equally more than low-paid 'professional bureaucrats' subordinate to the MOH.³² If some were like Evan Evans, sanitary inspector for Ystradgynlais rural district, who had no sanitary knowledge or experience when he was appointed, and lacked the personality to drive reforms, others like Pritchard in Brecknock RDC or John Williams in Edeyrnion RDC in Denbighshire, played a major role in setting the agenda for sanitary reform.³³ Notwithstanding the fact that many were part-time and held a number of posts, sanitary inspectors were often the face of the rural authority. They engaged directly with members of the public and were deeply involved in the day-to-day sanitary realities found in rural communities.³⁴

In addition to their routine tasks, rural sanitary inspectors would identify cases of infectious or epidemic disease to the MOH and respond to outbreaks, whether in tandem with the MOH or working independently. Booth Meller, the MOH for Bridgend and Cowbridge RDC in the Vale of Glamorgan, explained in 1894 how it was the sanitary inspector who would 'visit every house where such a disease exists, give the necessary instructions as to isolation, and carry out under the director of the Medical Officer, the most important duties of disinfection personally'.³⁵ The same approach was in place in Llŷn RDC, while in Brecknock RDC the sanitary inspector undertook all the work of identifying and tackling outbreaks as the 'responsible officer in sanitary matters'. If the LGB considered the latter 'not a proper state of affairs', more generally rural sanitary inspectors were tasked with undertaking remedial measures to limit or halt an outbreak, oversee progress, and report back to the rural authority.³⁶ The first step, however, was knowing that an outbreak had occurred and what the cause was.

Finding and reporting outbreaks in rural communities

As Katherine Gardner shows, by the first wave of the influenza pandemic in 1918, epidemics had become 'unfortunate and inconvenient but also an accepted part of life'.³⁷ Although sanitary officials were acutely aware that the general health of a district was different from its sanitary condition, notwithstanding the cultural myths associated with the countryside, rural communities

were not healthy rural havens.³⁸ In their reports, LGB inspectors and rural sanitary officials focused on polluted environments that needed attention; after all, a village or market town that was felt to have a good standard of sanitation needed little attention.

Often quick to draw conclusions of ignorance or neglect when they encountered sanitary defects, rural sanitary officials drew attention to those communities where poor housing conditions, overcrowding, limited or contaminated water supplies, poor drainage, and inadequate methods of refuse disposal existed. One of the most acute issues facing rural authorities in Wales was housing. Bernard Harris has suggested that it would be wrong to assume that housing problems in a small town 'were necessarily the same as those of a large city', but contemporaries were clear that rural housing conditions in Wales were equally bad, if not worse, than those encountered in cities.³⁹ While conditions varied considerably between regions, market towns, and villages, reports provided a litany of problems that highlighted dilapidated buildings, inadequate sanitation, poor ventilation, infestation, dampness, and overcrowding. 'Tumbling and decaying cottages' were felt to exist 'on every hand' across rural Wales.⁴⁰ Writing about the parish of Llandegfan, for example, the *North Wales Chronicle* reported in 1899 how the houses were 'not fit for pigs to live in'.⁴¹ Not only were conditions, in the words of Cardigan RDC medical officer, believed to be 'favourable to the propagation of infectious disease' but also, as discussed below, they made the deployment of disinfection and isolation as technologies to control disease outbreaks problematic.⁴²

Environmental conditions in villages and market towns were framed in reports as often little better, far worse in general than conditions urban officials encountered outside of slum districts. For instance, in the village of Aberkenfig in Glamorganshire, Edward Richards, a local doctor, explained how the streets were little more than 'boggy swamps and cesspits almost impassable to pedestrians and dangerous to vehicular traffic'.⁴³ Writing about Carmarthen rural district in 1878, the LGB inspector noted how 'ashes, stable manure, and foul refuse of all sorts are commonly heaped up near to dwellings or on the roadside'. Most of the privies were old and in a poor state, with most of the sewage passing untreated into local streams.⁴⁴ Traditional practices, such as the shallow disposal of excrement in cottagers' gardens, provided opportunities for groundwater contamination.⁴⁵ A reliance on wells and localized sources of water, as Romola Davenport et al suggest, may have reduced the risk of waterborne diseases spreading between communities but they also made small towns and villages vulnerable: the contamination of a stream or well a community relied upon could see a higher proportion of the inhabitants affected.⁴⁶ For larger villages and market towns, the exhaustion or pollution of local supplies, the adoption of water closets, and increased sewerage released into local watercourses multiplied the risk of faecal contamination of water supplies that the same communities used.

If insanitary conditions were localized, not uniform, outbreaks of typhoid and other waterborne diseases, 'fever' (a generic term which included typhus, typhoid or enteric fever) as well as diphtheria and scarlet fever were commonplace rather than dramatic events. Typhoid was an endemic and epidemic problem in many rural communities into the twentieth century. In Carmarthen rural district, for instance, the 1870s saw 'successive years' of 'fever' with enteric fever believed to be 'almost universal in the district' given the 'excremental fouling of air, earth or water' that prevailed.⁴⁷ Elin Evans, Anglesey's MOH, explained in 1884, how the district was seldom free of typhoid, while in Gorseinon near the Loughor estuary in south Wales polluted wells and an absence of drainage ensured that the village suffered repeated outbreaks of typhoid throughout the 1890s.⁴⁸ Although by the 1890s, tuberculosis was attracting increasing attention as an endemic disease, influenza was a minor concern.⁴⁹ Rural MOHs placed little apparent weight on influenza as a public health concern, often only noting it in passing if deaths occurred before the situation dramatically changed in July 1918.⁵⁰ More generally, most outbreaks of infectious disease in rural communities often involved a small number of cases and occurred against the backdrop of the overall decline in mortality that characterized the last two decades of the nineteenth century. In many rural districts, a relatively thin distribution of people, the isolated nature of many rural communities, and a mountainous topography ensured that many outbreaks tended to be confined.

The first part of responding to an outbreak was knowing about it. Before the introduction of voluntary (1889) and then compulsory notification (1899), which required householders and/or general practitioners to report cases of certain infectious diseases to the local authority, sanitary officials relied on information gathered during their routine visits or that supplied by those living in the affected community.⁵¹ Although experiments in notification before 1889 were limited to provincial English towns and cities, common problems in reporting disease outbreaks were experienced in urban and rural districts. Not all were willing to give information. Hugh Rees, MOH for Caernarvonshire Combined Sanitary District, explained in 1885 how cases could be concealed due to ‘fear of the consequences, or of public opinion’, forcing him to rely on house-to-house visits and local intelligence provided by the police. Mild cases, particularly of childhood diseases such as scarlet fever, also posed problems: they were likely to go unnoticed.⁵² The gradual adoption of the 1889 Act by rural authorities in the 1890s did aid reporting, which by the time the mandatory 1899 law came into effect was widespread. However, the relatively low number of general practitioners working in rural Wales caused delays in this process. Sanitary officials frequently wrote of their frustration about how quickly they were notified of outbreaks.⁵³ Once notified by either a householder, doctor, the police or concerned members of the community, communities and premises were visited as quickly as possible by the MOH or more often the sanitary inspector. They would inquire into the origin of disease and ensure ‘all precautionary measures were rightly observed’.⁵⁴

However, if urban officials faced problems of scale and concealment in large cities, even with the adoption of notification, rural sanitary officials faced obstacles peculiar to the environment in which they worked. Notification certainly increased the information available to rural officials, but it did not enable them ‘to visit and report immediately any sanitary defect’ in rural areas, as Leicester’s MOH felt it did for cities.⁵⁵ Instead, news of an outbreak could be slow to travel given the nature of rural transport networks or the sheer size of the districts rural officials were responsible for, which also ensured infrequent visits. Writing about Llandaff and Dinas Powis RDC in Glamorganshire, Richard Pritchard, the MOH, noted how he found it ‘practically impossible to make a systematic and thorough inspection of such a large district’.⁵⁶ The isolation of some rural communities only compounded these problems of scale. In complaints about their workload, Brecknock RDC’s medical officers explained how they covered ‘a vast area of 200,000 acres and population of 11,000 inhabitants in our District’ and faced problems associated with ‘the distance and inaccessibility of many parts of it from our official centres’. They noted how ‘in a sparsely populated rural district the duties of Medical officer are very onerous, as the houses, far apart, must be separately examined’, noting how ‘In more thickly populated areas’ the duties ‘entail less labour and occupy far less time’.⁵⁷ Towns may have had larger, more densely packed populations and faced more frequent outbreaks, but urban officials were better resourced, did not have to travel the same distances, deal with isolated communities, or work over a mountainous terrain with few transport networks as many rural sanitary officials did in Wales.

Nor were conditions believed to produce outbreaks always obvious in rural districts. While dirt was viewed as a danger to public health, it could mean different things in rural communities. It was not that the offensive odours associated with insanitary environments had different meanings in rural communities – those living in villages were just as likely as town dwellers to note their disgust of foul-smelling drains and privies, but as public health manuals explained agricultural practices, farmyards, and pigsties added odours that made it much harder in rural districts to determine the presence of dangerous nuisances by smell.⁵⁸ As one writer in the *Western Mail* explained in 1894, agricultural practices and country air covered a ‘multitude of sanitary sins’, ensuring that it was not always possible to detect when dirt had become Douglas’s ‘matter out of place’.⁵⁹ It was in the face of these obstacles – geographical, topographical, and olfactory – that sanitary officials investigated disease outbreaks.

Once aware of an outbreak, sanitary officials drew on a familiar but complex, hybrid approach to identify its causes that was firmly rooted in an environmental understanding of disease

causation. While rural sanitary officials seemed much less concerned than their urban counterparts in carrying out epidemiological studies, the distribution of cases did give some clues as to where to look.⁶⁰ When 'English cholera' was reported in the isolated village of Prenteg in Caernarfonshire, the MOH traced the outbreak back to a contaminated roadside waterspout located near where the cases had occurred.⁶¹ Rural sanitary officials, however, mainly relied on a 'habit of close inspection' and an embodied empirical approach rooted in the senses.⁶² Manuals repeatedly advised sanitary officials to 'sniff' out offensive and pathogenic odours in order to identify sanitary defects.⁶³ Evidence from rural sanitary inspectors shows them using this approach: for them, detecting foul odours was not about miasmas but about the olfactory indicators of conditions liable to produce disease.⁶⁴ Yet as indicated above smell could only go so far. A visual inspection of watercourses, streets, drains, and housing was equally important as inspectors directed their immediate attention to the most common causes of contagion – polluted water, refuse, defective drains, and overcrowded, damp and insanitary housing. Investigations into disease outbreaks hence often revealed familiar and generic problems.

Notwithstanding the views of urban MOHs that rural officials seldom knew what they were doing, this embodied approach and a focus on key sites of contagion allowed rural MOHs and inspectors to come to quick conclusions about what needed to be done immediately to prevent cases from increasing. For instance, a typhoid outbreak in the growing village of Taibach in Glamorganshire in 1873 was traced back to the 'want of proper means of carrying off slops' which had contaminated the river Ffrwdwyllt from which some of the villagers drew their drinking water.⁶⁵ Impure water, want of suitable drainage, and overcrowding were all seen as responsible for outbreaks of typhoid in the Garw valley in the 1880s.⁶⁶ When repeated cases of diphtheria were reported in the village of Llanrhaeadr on the foothills of the Berwyn mountains in mid-Wales, an inspection of the houses where the cases occurred revealed them to be damp with privies 'seen' to be 'freely soaking into the surrounding soil'.⁶⁷ If sight and smell were important tools, rural sanitary officials followed common sanitary practices and took samples of water for analysis. When typhoid broke out in Llangadog in Carmarthenshire in 1896, samples of water were analysed, the pumps were inspected, and the proximity of ash and manure heaps, privies, and pigsties to local wells were considered.⁶⁸ Manuals also pointed to the tools, which included drain grenades or smoke machines to identify leaky pipes, that could be used to supplement the inspectors' senses, though the nature of surviving reports means we cannot be certain such methods were used in rural districts.⁶⁹

Germ theories did not eclipse these local empirical investigations and the role of germ-based practices was not always visible in the inspection practices used by rural sanitary officials.⁷⁰ Where many provincial councils and districts in London were making use of bacteriological testing by the 1890s, its use in rural authorities was limited. For those rural authorities that did undertake testing, it was not viable – financially or practically – for them to have their own facilities: they contracted them out to newly established county council laboratories or postal testing services.⁷¹ But even where bacteriological analysis was employed, it was often used to confirm existing suspicions about the source of contagion. Many rural MOHs and sanitary inspectors seemingly worked on the balance of probabilities linked to their knowledge of the area and what could be seen and smelt, an approach that reflected the persistence of an inclusive environmentalism that for rural officials was quick and delivered results to direct their actions. Their reports repeatedly linked outbreaks back to the physical environment – from contaminated water supplies to defective privies and drainage to damp and dilapidated buildings – and the nuisances they perceived arose from them.⁷²

Investigations into disease outbreaks were not just an aggregation of physical observations by sanitary officials, however. They also relied on the knowledge of those living in the community. In his important work on sanitary inspectors in mid-Victorian England, Hamlin pointed to the role of complaints in their day-to-day work, but evidence from rural communities also shows how those living in the countryside were eager to use their local knowledge to identify the cause of an outbreak.⁷³ This willingness in part reflected anxiety and the need to limit the spread of disease to protect households, but it was also driven by a desire to clean up the rural environment, which

became more prevalent as the period progressed. Neighbours, tenants, and landlords would report conditions they believed were responsible (or feared were responsible) for the outbreak. In the village of Rhiw in Caernarvonshire, residents in 1881 were careful to explain to the MOH that outbreaks of fever were the result of local environmental conditions that needed to be remedied.⁷⁴ Newton Wade from Machen wrote to his local rural district council to explain how an investigation should be made of the local water supply following an outbreak of diarrhoeal disease.⁷⁵ Ratepayers' concerns about local conditions and epidemic disease were equally visible in Chepstow rural district in Monmouthshire. Here alarm was expressed about the condition of the local pond in Caldicot. As one ratepayer explained with 'human excrement' being dumped in the pool, 'an abominable nuisance must be the result and possibly an epidemic of Typhoid'.⁷⁶ Such concerns reveal how individuals and communities understood the physical environment around them and how they worked with MOHs and sanitary inspectors to identify what they saw as the cause of individual outbreaks.

Given the complexities of the rural environment where, as we have seen, dirt and smell could mean different things, answers as to why individual outbreaks occurred were not always forthcoming. In his 1893 report, Francis Bond, the MOH for Chepstow RSA, explained how the origins of some outbreaks, such as typhoid in the village of Caerwent, remained 'puzzling'. For Bond, uncertainty 'so often enshroud the origin and nature of death... and for which no satisfactory explanation on the ordinarily accepted theory of the origin of this disease can be found'.⁷⁷ The report book of Robert Derrett, sanitary inspector for Pontypool RDC, equally related how in some cases finding the cause of the outbreak was not possible.⁷⁸ When this occurred, rural sanitary officials targeted the most obvious and predictable sources of contamination.

'To minimize the risk of infection': Managing outbreaks

When it came to managing outbreaks, rural officials followed an approach focused on remedying those material conditions believed to give rise to infectious disease. What we can see in these responses is the specificities of public health practices on the ground. Even before the cause of an outbreak had been determined, information was issued to communities and households on measures to take to limit the spread of disease. For instance, in Pontypool rural district in Monmouthshire, cards and pamphlets detailing the precautions to be taken during outbreaks were immediately sent by the sanitary inspector even before he visited. This system was seen as 'beneficial in preventing the spread of contagion'.⁷⁹ Pontypool RDC was not alone in adopting this strategy. Other rural districts delivered printed instructions to homes where infectious disease was reported, while in Llŷn rural district in Caernarfonshire the sanitary inspector provided directions 'verbally and in writing'.⁸⁰ Notices were also placed on wells or pumps advising people either not to use them or to boil the water before use. Notices, placards, and pamphlets acted as a low-cost first line of defence against contagion spreading, measures frequently overlooked in existing historical studies.

Once warnings and notices had been issued, action focused on measures designed to ameliorate or remove the immediate sources of infection. The nature of the village where the outbreak occurred was considered, and steps were taken to target obvious nuisances. This approach is built on established practices to clean up the environment and a belief that targeting insanitary conditions would stop or limit most infectious diseases, a view not materially disrupted by germ theory. In Caernarvonshire combined sanitary district, for instance, the sanitary inspector attended to the 'removal of privy and middens' in villages where outbreaks were reported, seeing such measures as an 'excellent palliative'.⁸¹ In Newton and Llanidloes rural sanitary district in Montgomeryshire, sanitary officials directed their attention to shallow and surface wells because, as Harold Palmer the MOH explained, 'this class of water is specially liable to contamination'.⁸² When enteric fever broke out in Crickhowell rural district in Breconshire in 1912, immediate steps

were taken 'to minimize the risk of infection' through cleaning the bed of Onney brook and flushing the slop water drains that discharged into Onney.⁸³ Sanitary officials would also temporarily close wells when cases of waterborne disease were reported. For instance, when an epidemic of typhoid in the small village of Coychurch in Glamorganshire was traced back to an unprotected local well it was immediately closed.⁸⁴ Such environmental remedial works were felt to have an immediate impact.

After investigating the local environment and targeting the obvious sources of contamination, rural sanitary inspectors made house-to-house inspections so that 'all defects brought to light' could be 'remedied as speedily as possible'.⁸⁵ When an outbreak of diphtheria occurred in the village of Llanfynydd in Flintshire in 1896, all the houses were visited. The investigation revealed how residents relied on the bucket system of excrement disposal, the contents of which were either buried in the garden or emptied into the river. In response, the MOH ordered 'that no more be thrown into the stream' and investigations were started into improving drainage in the village.⁸⁶ In Ponthir in Monmouthshire, repeated outbreaks of waterborne disease in May 1901 were traced back to several houses on Ponthir Row. Upon investigation, two of the water closets were found to be 'in a very foul state' with the residents throwing their slops into the small stream at the back of the row. A further inspector in November reported that the houses had been 'much improved' and the stream thereby rendered less polluted.⁸⁷ Instructions were given to the owners of the properties to clean out the stream and provide new water closets.⁸⁸

Alongside environmental measures to target the immediate sources of infection in the first few days or weeks of an outbreak, sanitary officials targeted schools to limit the spread of disease, notably for measles, diphtheria, whooping cough, and scarlet fever, though the measure was also used for other diseases. School closure was already an established feature of managing outbreaks by the time rural sanitary authorities were formed. Practices were codified by the LGB in 1890 with its approach by the end of the century favouring class and school closures.⁸⁹ Rural officials, however, tended focus on individuals not institutions, working with teachers as the first line of defence against the spread of contagion in the classroom. Children from affected households were excluded from school, though sanitary officials complained that their advice was not heeded when cases were mild in a climate where some childhood diseases, such as measles, were given 'little thought'. When cases of 'wilful exposure' were discovered, prosecution ensued as in Swansea RDC in Glamorganshire in 1905 when a child with scarlet fever and their guardian were discovered in the local barbers a mile from their home.⁹⁰ If outbreaks continued, schools were closed. For MOH in Pwllheli RSA in north-west Wales, removing 'the chief cause of the meeting and mingling of the children' was 'over and over again' often most 'effective in combatting' an outbreak.⁹¹ Closures were, however, expected to be 'judicious', though they could last months.⁹²

The inhabitants of market towns and villages were not passive in this process. Nor does the evidence suggest that they resisted intervention, a position at odds with the dominant view that opposition often characterized public health measures. Sanitary officials may have regularly complained about the 'great carelessness' they encountered in some rural communities in the normal exercise of their duties, but infectious disease was a potent motivator for householders and landlords to cooperate with the local authority.⁹³ Local agency was important in the everyday politics of responding to disease outbreaks as sanitary inspectors, landlords, and tenants negotiated the nature and boundaries of action. We can see this process at work in Narberth rural district in Pembrokeshire throughout the 1890s. For instance, when cholera was reported in the village of Templeton in 1893, the Clement Evans, the MOH, reported how 'I found the people most willing to do what they could in removing any nuisance at my suggestion'.⁹⁴ In Saundersfoot, a year later, cases of infectious disease saw interested inhabitants work with Evans to inspect the village 'especially those parts which were most defective in the sanitary sense' and undertake the improvements Evans advised.⁹⁵

By the 1890s, responses to infectious disease outbreaks in rural Wales increasingly followed a set pattern designed to manage, reduce, and prevent their spread. This approach is illustrated by

the response to an outbreak of typhoid in Pontardawe rural district in the Swansea Valley in 1893. Following notification, existing nuisances were immediately targeted as the probable cause of the outbreak was investigated. As a 'precautionary measure', the sanitary inspector closed off existing water supplies and flushed the drains. Handbills were distributed advising people of what precautions to take. After further investigation, it was found that the new drains being laid had intercepted several 'foul old drains', disturbing the subsoil which had become saturated with 'sewage in its various forms'. The need for further work on the drains was identified. However, the response to the 1893 typhoid outbreak indicates two further measures: disinfection of homes and belongings and the isolation of the sick.⁹⁶ How did these measures work in practice in rural communities?

Disinfecting the rural home

Disinfection of objects, spaces, and people re-emerged in the late nineteenth century as an important line of defence against the spread of infectious disease. New germ theories and the increasing focus on preventative public health to 'stamp out' disease helped recast existing disinfection practice as a 'germ practice'. Legislation extended the powers available to local authorities to cleanse or disinfect any house or 'any article' liable to harbour infection. Bacteriological experiments and new technologies saw disinfection practices emerge that were designed to rid people's homes, clothes, and belongings of dangerous microbes, though few histories have examined how such practices were translated into local practice.⁹⁷ This shift in disinfection practices coincided with a growing literature that emphasized the dangers of the home as a haven for dust. As disinfection was remade as a 'germicide', the home was constructed as a site through which infectious disease was to be managed and controlled, devolving some of the responsibility for cleanliness from housewives and mothers to sanitary authorities.⁹⁸ When it came to managing disease outbreaks in the late nineteenth century, the home was not a private space but a form of public space.

Yet, disinfection did not emerge suddenly in response to germ theories. The disinfection of streets, drains, and sewers using a range of chemical agents became an established practice in the 1830s and 1840s to sanitize the environment to prevent epidemic outbreaks.⁹⁹ Rural authorities continued with these older practices, often using disinfection indiscriminately in drains and watercourses. For instance, when enteric fever was reported in the village of Cwmdru in the Black Mountains, 'disinfectant powder' was used on the slop drains.¹⁰⁰ In Pontardawe RSA in Glamorganshire, copperas (iron sulphate) from the local tinworks was diverted into the canal, which was also used for drainage, 'for a week or two in order to deodorise the effluent in the drains' in response to typhoid outbreaks in the 1890s.¹⁰¹ Bridgend and Cowbridge RSA made liberal use of disinfectant when disease outbreaks were reported, which include dumping large quantities into local brooks.¹⁰² If disinfection was part of the routine work of rural sanitary administration, Rebecca Whyte suggests that after 1870 local authorities undertook 'increasingly ambitious disinfection programmes' focused on the home and the disinfection of any items in close contact with the sick.¹⁰³ Responsibility in rural authorities mainly fell to sanitary inspectors: they would issue notices to owners or occupiers to cleanse or disinfect properties, determined whether disinfection had been effective, and, after the 1890 Infectious Diseases Act placed responsibility for disinfection firmly with the sanitary authority, often undertake the process.

Sanitary manuals detailed how carpets and rugs were to be beaten, floors were to be brushed and swept, with bedding, mattresses, and clothing treated with disinfectants or heat, either in the form of boil-washing or steaming. Houses were to be emptied of people and disinfected or fumigated. Manuals explained how whitewash was to be used and surfaces disinfected or cleaned. Some manuals also advocated the removal of wallpaper.¹⁰⁴ The reality in rural districts seldom matched these recommendations. However, if disinfection was seldom conducted in a methodical

way, even in big cities, the practices adopted by Penybont RDC in Radnorshire illustrate a common approach in rural Wales that suggests a more interventionist approach to disinfection than adopted in many towns. When cases of notifiable disease were reported, the council paid for disinfectant to be distributed and instructions ‘couched in simple terms’ on how to use them were left at the homes of the sick. Follow-up visits by the sanitary inspector checked both on the sick and on how disinfection practices were being followed.¹⁰⁵ In Llŷn RDC, the sanitary inspector ensured that rooms were ‘stripped of its wallpaper but in any case is sprayed with formalin or fumigated’ and that ‘infected clothing and bedding’ was sent for disinfection.¹⁰⁶

Notwithstanding the growing faith in the power of disinfection, practices remained conservative in rural districts where debates in the medical press about which disinfectants were most effective appeared to have little impact.¹⁰⁷ Limited financial resources and personnel were partly responsible as rural officials had to make do with the resources available to them, but practicalities were important. ‘Old’ non-bacteriological methods in the form of fumigation and ‘new’ methods that used disinfectants overlapped, regardless of the disease outbreak. In Cardiganshire, fumigation with sulphur or formalin or spraying with formalin were recommended by the county council along with the use of hot water to remove dust.¹⁰⁸ In Hawarden RDC in Flintshire, carbolic was left at houses by the sanitary inspector and then after the illness had passed the house was fumigated with either Konoform, which gave off formalin vapour, or sulphur.¹⁰⁹ More often carbolic powder or the burning of sulphur cakes was employed. Such fumigation methods were considered practical: they were believed to saturate the room, giving the disinfectant more time to work, and did not damage belongings or cause considerable discomfort to householders.¹¹⁰

The 1889–94 Russian influenza pandemic spurred on some RSAs to invest in disinfection equipment. For instance, high levels of influenza saw the Cardiff RSA and Bridgend and Cowbridge RSA in Glamorganshire purchase a portable disinfecter.¹¹¹ Growing concern about endemic tuberculosis after 1900 provided a further incentive. Yet, the provision of disinfection facilities and equipment for rural areas was limited even at a time when 40 per cent of town dwellers could not expect their authority to disinfect household belongings.¹¹² At a county level, Anglesey, Breconshire, and Cardiganshire reported no disinfection apparatus in the 1890s. Carmarthen RDC had an oven but it was felt to be ‘very imperfect’, while Wrexham RDC in Denbighshire and Llanelly RDC in Carmarthenshire both made use of the popular Lyon’s portable disinfecter.¹¹³ Other rural districts made practical arrangements with nearby towns. This was an approach adopted by St Mellons RDC and Magor RDC in Monmouthshire: unable to resource their own facilities, both entered into an agreement with Newport borough council to disinfect clothing and bedding.¹¹⁴ However, as William Williams explained in his 1892 report as Glamorgan county medical officer of health, ‘Without the means of efficient disinfection of articles of clothing, bedding, etc.’ at a local level ‘the efforts of Sanitary Officials to prevent the spread and curtail epidemics of infectious disease, are, to a large extent, frustrated’.¹¹⁵ Rural sanitary officials certainly felt this frustration, but they also encountered practical obstacles to disinfection.

The main barrier was not opposition to disinfection as often seen in towns and cities, though the minutes of rural authorities contain references to resistance, but rather the nature of rural homes.¹¹⁶ As material spaces, rural homes proved harder to disinfect than the homes of the urban working classes: the mundane domestic spaces encountered by rural sanitary officials were resistant to inspection and intervention. Irregular walls and rough surfaces offered both ‘a perfect protection for germs’ and proved hard to disinfect.¹¹⁷ Robert Edwards, county medical officer for Merionethshire, explained how under these conditions the disinfection agent ‘readily evaporates and thereby fails to penetrate into those situations where one would expect to find the causative germs’.¹¹⁸ With many rural cottages often having no doors on rooms, ‘efficient fumigation’ was an ‘impossibility’.¹¹⁹ Rural officials were aware that while more stringent measures were often needed they were impractical because they were too expensive or would lead to the ‘discomfort to inmates’.¹²⁰ With a note of despair in his report, the medical officer for Llandysul rural district in

Cardiganshire wrote that ‘the whole process [of disinfection], as now carried on, is almost a waste of time and money’.¹²¹ Even with evidence suggesting that by the turn of the twentieth century householders had largely accepted disinfection in combatting the spread of infectious disease, practical obstacles remained that hampered rural sanitary officials’ efforts. As the MOH for Gower RDC in southwest Wales explained in 1903, disinfection was often ‘carried out by the best means we can provide in a county district’.¹²²

Isolating the infectious

Medical thinking shifted after 1870 to view a range of respiratory and infectious diseases as ‘personal disease[s] personally spread’.¹²³ Where disinfection aimed to destroy the agents responsible for disease, isolation, ideally in hospital, or in a home aimed to prevent its further transmission as part of an approach that favoured disease suppression. Fever and isolation hospitals started to emerge in towns on a large scale in the 1870s, not as a natural outcome of germ theory but as part of a system of public health governance, with the 1875 Public Health Act providing sanitary authorities with the power to build isolation hospitals. The aim of these institutions was not to prevent infectious disease but to stop outbreaks from becoming epidemic.¹²⁴ Writing in the same year as the 1893 Isolation Hospital Act empowered county councils to force local authorities to build isolation facilities, William Williams, county medical officer for Glamorgan, was forthright in his claims that ‘Isolation Hospitals are, next to Compulsory Notification, the most important provisions against the spread of infection which Local Authorities have power to make’.¹²⁵

Just as in urban areas, outbreaks of infectious disease, particularly smallpox, spurred on discussion about the need for an isolation hospital or set plans in motion to build one. Chepstow RSA in Monmouthshire discussed the need for an isolation hospital in the 1874 and 1885 in response to smallpox outbreaks, while Andrew Whyte, MOH for Brecknock RSA in Breconshire, was anxious to see an isolation hospital built following the district’s narrow escape from cholera in 1893.¹²⁶ However, although Matthew Newsom Kerr shows how for urban authorities isolation in separate and special hospitals came to be accepted during the 1880s as a key infrastructural focus, rural areas remained underserved.¹²⁷ Population density, proximity to larger towns where facilities existed, and local resources all shaped attitudes and provision. Many rural authorities resisted the expense or rejected their need for sparsely populated districts.¹²⁸ The LGB was initially sympathetic: until the 1900s, it did not always consider isolation hospitals necessary for districts with ‘scattered poplns [sic]’. As one LGB official explained, the ‘benefit derived would not be commensurate with the expensed involved’.¹²⁹ The result was limited provision for the isolation of the infectious in market towns and villages. Where rural authorities in Glamorgan had access to 190 beds in 1895, reflecting the county’s industrialized nature, more agricultural and sparsely populated counties, such as Breconshire, Pembrokeshire, and Radnorshire, often had no isolation facilities.¹³⁰

Pressure from the LGB and from county councils after 1900 in response to growing concerns about scarlet fever and diphtheria did see provision extended in response to localized outbreaks. However, the expense of establishing and maintaining isolation facilities for sparsely populated districts remained a major barrier, especially as many rural districts were struggling with the cost of sanitary works and lower local rates given the depression in agriculture. Alastair Ritch suggests the rural districts in England made use of workhouse infirmaries to provide additional facilities but there is little evidence from Welsh rural authorities that the same practice was adopted in Wales.¹³¹ This might reflect ongoing opposition to the workhouse in Wales combined with the location of workhouse infirmaries, which were often at a distance from where an outbreak occurred.¹³² Rather than using workhouse infirmaries, existing buildings were converted or used on an *ad hoc* basis to provide short-term isolation accommodation. For instance, smallpox patients in Penllyn RDC in the Vale of Glamorgan were isolated in an old church, while Brecknock

RDC in Breconshire made use of an old farm.¹³³ Neighbouring councils entered agreements to share isolation facilities, which by the 1910s was the LGB's preferred solution for rural districts with scattered populations.¹³⁴

By 1911, rural authorities were conscious that isolation was not only for the patient's good but also 'for the good of the community'.¹³⁵ Yet, practical barriers remained and opportunities for isolation in rural districts continued to be limited. If cities found it hard to keep pace with demand, many rural authorities made only temporary arrangements in response to outbreaks. Where Neath RDC in Glamorganshire rented the local reading room during outbreaks, Haverfordwest RDC in Pembrokeshire made do with a tent which could accommodate two patients.¹³⁶ However, as John Bridge, county medical for Breconshire, explained in 1911, such temporary arrangements 'can seldom be provided and got ready for use until the time when it would have been most service is past'. He went on to explain how temporary hospitals erected 'in the stress of an epidemic are never satisfactory'.¹³⁷ For William Williams, the want of isolation accommodation often meant that 'many an epidemic might [that] have been prevented' had isolation facilities been provided.¹³⁸

Although it was recognized by urban MOHs that isolation in poor and working-class homes was practically impossible, with Whyte suggesting that isolation in the home was more a middle-class activity, such practices were common in rural regions where access to isolation facilities was limited.¹³⁹ Nursing the sick at home had a considerable cultural resonance as an important duty for women and as an integral part of the Victorian domestic ideal, but in rural communities the need to isolate and care for the infectious within the home was often a necessity.¹⁴⁰ However, it was not just a question of whether facilities existed or not. Sanitary officials made judgements based on where cases occurred. This is illustrated in the response to a smallpox outbreak in 1903 in the parish of Mynyddislwyn in St Mellons RDC in Monmouthshire. Although no isolation hospital existed in the district – the rural district council was in the process of building a fifteen-bed facility – it rented two cottages for the purpose.¹⁴¹ In his report to St Mellons RDC, Walter James, the MOH, noted how the outbreak occurred in part of the parish which 'stands in a very isolated position on the mountain top'. Because of the 'perfectly isolated healthy position' of the farm at the epicentre of the outbreak, James reported that the removal cases to one of the two cottages were unnecessary. Instead, he arranged for the cases to be nursed at the farm by a man who would also act as watchmen to prevent anyone visiting. James' actions were commended.¹⁴²

In their pamphlet *Directions for Preventing the Spread of Infectious Disease*, Llanrwst RSA detailed the arrangements that should be followed at home. The instructions were far removed from the complex and intricate precautions that advice manuals recommended but gave insights into how domestic isolation was to be managed in the rural home. The *Directions* outlined how the sick should be isolated in a separate room, 'if possible at the top of the house', with a sheet hung over the door to act as a warning that no one should enter. All 'unnecessary items', such as carpets and other soft furnishings, which could harbour dust or germs, were to be removed and disinfected.¹⁴³ Yet securing domestic isolation was far from straightforward. Until the Edwardian period, when attitudes to isolation had shifted, sanitary officials spoke of the difficulties of 'impressing' upon people the need for isolation at home, but it was the practical barriers that were the most significant.¹⁴⁴ Overcrowding was a widespread problem in rural communities and rural housing was associated with a wide range of sanitary defects on a par with the worst urban slum. As noted above, many rural cottages lacked doors. The chief problem was one of space, however. Sanitary officials were all too aware that it was often 'obviously impossible to isolate a case of infectious disease in a workman's dwelling'.¹⁴⁵ Writing about Anglesey in 1884, Elin Evans, the MOH, explained how isolation 'can scarcely ever be carried out with any degree of success in the dwellings of the poor, where, as a rule, there is no means of isolation'.¹⁴⁶ In Carmarthen rural district, for instance, many houses had a single room, with parts of the ground floor separated by a partition or screen. This made the isolation impossible.¹⁴⁷ Faced with an outbreak of typhoid at Pen-y-coedcae in 1904, the MOH for Llantrisant and Llantwit RDC in Glamorganshire noted how seven cases occurred in a 'miserable little cottage with practically only one small room down and

two smaller ones upstairs. It is manifest that the impossibility of isolating the sick from the others, and the want of air space, etc., account for so many cases in the same family'.¹⁴⁸ Rural sanitary officials were hence sanguine about what could be achieved. Rural responses to infectious disease were not, as Newsom Kerr argues for towns, 'completely reshaped by the quick and efficient isolation of dangerous infectious persons'.¹⁴⁹ As the county medical officer for Merioneth explained in 1912, at best only one in a hundred cases could be properly isolated.¹⁵⁰ The practicalities and obstacles ensured that insolation remained a limited strategy for many rural authorities, while for families it imposed a physical and emotional strain given the nature of rural housing.

Coda: 'Do not be frightened'

Local reactions by rural authorities in Wales to the 1918/19 influenza pandemic reflected patterns established since the 1870s for responding to infectious outbreaks but were demarcated by the experiences of the three successive waves. If Covid-19 brought the 1918/19 influenza pandemic into sharp relief, rather than being a single event, contemporaries experienced the three successive waves of the influenza pandemic as a 'succession of crises and moments of respite'.¹⁵¹ Although overlooked in official reports, Wales newspapers started to refer to the 'mysterious war influenza' reaching south Wales in June and north Wales in July, its spread aided by troops returning home on leave.¹⁵² Throughout June and July, district news and death announcements highlighted influenza's impact on communities and families. By autumn, as Gardner argues, the second wave was 'marked by successive deviations from a 'normal' influenza outbreak' as healthy young adults had the highest vulnerability and mortality.¹⁵³

Unlike England and Scotland where urban hierarchies were important to both influenza's spread and incidence, in Wales case numbers and fatalities were often higher in rural areas as a result of limited access to medical services, poverty, and poor housing conditions.¹⁵⁴ Writing about Carmarthenshire, the county medical officer noted that 'though the population in the rural districts was only about 30 per cent more than the urban districts, the number of deaths from influenza appeared to be over 100 per cent more in the rural districts'.¹⁵⁵ Yet, as the experiences of Merionethshire show, just as with other infectious outbreaks, the pandemic's impact was highly localized, shaped by transport and personal networks. If each wave had its only characteristics, for individuals the pandemic was experienced as a local event. For instance, where Penrhyndeudraeth in Ffestiniog RDC suffered, Minffordd and Penryn, both about a mile away, saw few cases.¹⁵⁶ With influenza effecting rural communities at different times and to very different degrees, the response by individual rural authorities was determined by the temporal and spatial experiences of the pandemic in any given locality.

Scholars have questioned the effectiveness of the LGB in response to influenza. For Sandra Tomkins, there was a 'failure of expertise' in policy reactions, which placed too much stress on prevention and not enough on domestic nursing or measures to support families.¹⁵⁷ Influenza was a familiar disease – significant outbreaks occurred in 1900, 1908, and 1915 – which was not viewed as dangerous to the majority of the population. Nor did the LGB feel that the strategy of notification, disinfection, and isolation it had favoured since the 1870s were workable for influenza: as the LGB noted when it came to influenza 'it is most difficult to apply measures of prevention with any substantial prospect of success'.¹⁵⁸ It was not therefore until October 1918 that the LGB sent official guidelines to local authorities. In their emphasis on minimizing exposure, their guidelines drew on established public health thinking. Sanitary officials were advised to close schools, encourage places of entertainment to limit performances, and recommend individuals have plenty of fresh air and take certain precautions, such as mask wearing.¹⁵⁹ The newly formed Ministry of Health repeated similar advice in 1919.¹⁶⁰ Official guidelines hence followed an established pattern: the main

response to the pandemic was a decentralized one based on existing administrative structures that emphasized local responsibility and decision-making to reduce exposure.

Local reactions to influenza's spread by rural Welsh authorities were at first muted. With disinfection having little effect with a disease that spread rapidly via air-borne infection, and with rural district councils having limited access to isolation facilities, the focus during the mild summer wave was on limiting not preventing influenza's spread through school closures.¹⁶¹ E.Y. Steele, MOH for Abergavenny RDC in Monmouthshire, summed up the thinking behind school closures: with schools considered 'the chief source of infection, even more than in towns', their closure was required 'to prevent it [influenza] spreading'.¹⁶² As influenza affected an increasing number of districts, and as more people fell ill in the second wave, rural district councils adopted a wider range of measures.

Although rural districts lacked the facilities and resources to isolate or care for the sick, as Beresford, MOH for Oswestry RDC explained, during the second wave rural authorities worked with the resources they had to take 'the bull by the horn' so that 'every possible precaution' was taken.¹⁶³ In addition to school closures as a 'precautionary measure', influenza saw increased attention directed at rural housing conditions.¹⁶⁴ The result was an increase in house inspections to identify what remedial improvements were needed. Rural district councils also started to press for a wider range of social gatherings, including church meetings, to be suspended.¹⁶⁵ As death rates reached their peak in November 1918, numerous rural councils increased their efforts to distribute precautionary advice. In Criccieth on the Llŷn Peninsula, 500 copies of the LGB's guidelines were sent out and churches were asked to offer instruction on how to minimize influenza to reach those unlikely (or unable) to read the pamphlets, which were only distributed in English.¹⁶⁶ Aberaeron rural district in Ceredigion went further. It sent instructions directly to those who had been in contact with influenza cases: they were advised how 'the open air life diminishes the risk of infection both to themselves and of others' and to use potassium permanganate as a gargle.¹⁶⁷

Responses by local authorities were cumulative: experiences from the second influenza wave saw a shift in action in response to the third wave. Although school closures, requests to owners to make improvements to houses where cases occurred, and issuing guidance remained the mainstays of action, an increasing number of rural authorities started to make nursing care available.¹⁶⁸ County councils equally started to intervene. For instance, aware that some rural regions in the north of the county were too poor to support a district nurse, Pembrokeshire County Council started to make provision available. In February, it agreed to divide the county into fifty districts and appoint health visitors 'so that the poor as well as the rich could get help when it was needed'.¹⁶⁹ In Cardiganshire, the county council provided funding to local nursing associations to extend the nursing available to rural communities, while district health visitors were asked to nurse influenza cases.¹⁷⁰ If national policy responses were lacklustre, local rural districts adopted more wide-ranging measures in an attempt to limit the epidemic and support the sick.

Although influenza cases continued to be reported into May 1919, just as with other epidemics, once the outbreak had passed public health work returned to its normal routine. Yet, the impact on rural sanitary officials remained visible. Rural MOHs reported being exhausted: one commented 'I have been through all the epidemics and know nothing in the history of medicine similar to the late influenza epidemic'.¹⁷¹ It was this exhaustion, rather than the measures adopted to limit its spread, that marked out the 1918/19 influenza pandemic in contrast to earlier responses to localized disease outbreaks.

'Every possible precaution': Conclusions

Discussing responses to enteric fever in Llangattock during 1911, Breconshire's county medical officer acknowledged the 'great and praiseworthy efforts' of local sanitary officials and their attempts to minimize the risk of infection. Not all rural officials received such praise, however.

In the neighbouring Llanelly rural district, the same official hinted at a more limited response and the need for ‘sympathy and action’.¹⁷² A need for more action did not equate to inaction, however. Outbreaks could speed up ‘much talked of schemes’ to improve the environment in a particular village or district, but reading local efforts across different rural authorities also reveals the specificities of responses to limit and prevent an outbreak’s spread in the first few days or weeks.¹⁷³ Here rural sanitary officials in Wales were not, as LGB officials from England often claimed, tardy or inefficient in their public health administration. They drew on the same practices as urban officials to control and limit infectious outbreaks as they went about investigating and mitigating or removing the immediate source(s) of contagion whether they be in terms of environmental factors, housing conditions, or individuals. Although the scale of action varied – market towns had more resources than small, isolated villages – rural sanitary officials reported how ‘every possible precaution’ was taken in response to infectious disease, often starting with actions shaped by an inclusive environmentalism that was quick and delivered results.¹⁷⁴ Their aim was to reduce exposure, even if the realities of the infrastructures associated with notification, isolation, and disinfection remained highly malleable, dependent on local contexts. Rural responses to the first and second waves of 1918/19 influenza pandemic replicated these established practices, with the third wave seeing a shift as more emphasis was placed on nursing and other forms of support.

If rural authorities after 1875 were not they plunged into crisis in the face of infectious outbreaks, nor were they reluctant to take action. They did, however, face practical limits in how they could respond that were peculiar to the rural environments in which they worked. Their options were restricted by the nature of the district, the material and housing conditions they encountered, and the limited resources available to them. All rural and urban sanitary authorities engaged in acts of resourceful adaptation, but rural authorities did not have the same powers as urban sanitary authorities. Nor did they have the same resources at their disposal: financially in the context of rural poverty, institutionally as evident in how rural communities had limited access to isolation facilities, and in terms of personnel given that many rural inspectors remained part-time until the 1900s. With limited resources or opportunities to provide isolation facilities, isolation in and disinfection of the home offered a further strategy, but the very nature of rural housing worked against sanitary officials. Scale and the nature of the community and district also mattered in ways that urban officials did not encounter. Just in terms of seeing cases and inspecting districts, even the LGB was aware that it was often not possible to visit every case of infectious disease or community where it occurred unless the case was considered ‘of a dangerous character’.¹⁷⁵ As the Chirk RDC’s medical officer explained in the context of an outbreak of scarlet fever in 1912, the biggest barrier was not the absence of isolation facilities or disinfection equipment but rather the ‘force of circumstances’ rural officials encountered on a daily basis.¹⁷⁶ These circumstances were significantly distinct from those in which their urban counterparts functioned, but such distinctions were often overlooked in the guidance provided by the LGB, in public health manuals and in the sanitary press, which were primarily designed for towns and cities.

Understanding how rural authorities and their officials responded to infectious disease outbreaks, along with the constraints they faced, reveals first the centrality and practicalities responses to infectious disease in the first few days and weeks after an outbreak which are often overlooked in existing studies. Second, and importantly, it draws attention to the necessity of looking at scales other than the global, national or urban to understand the specifics of public health work on the ground. How those living in rural communities responded to outbreaks of infectious disease and the measures adopted in response requires further investigation.

Notes

1 ‘Rural Sanitation’, *Western Mail*, 10 October 1895.

2 ‘Caernarvonshire Combined Sanitary District’, *North Wales Chronicle*, 22 May 1897.

3 Wohl, A. S. 1983. *Endangered Lives: Public Health in Victorian Britain* (Cambridge MA), pp. 187–91.

- 4 See, for example, **Hinde, A. and Harris, B.** 2019. 'Mortality decline by cause in urban and rural England and Wales, 1851-1910', *History of the Family*, 24: 377-403.
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