



Public Health
England

Protecting and improving the nation's health

TB in low incidence areas – a resource

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Executive Summary

The incidence of tuberculosis (TB) in England is declining; consequently, more areas are becoming areas of low TB incidence. It is recognised that caring for TB patients in these areas brings challenges and this resource has been written to support regional TB Control boards, clinical teams and other partners to better meet the needs of patients in low incidence areas.

The World Health Organisation (WHO) defines a low incidence area as an area with less than 10 cases per 100,000 population per year. Many local authorities in England now have very low rates of TB; in 2019 nearly 59% had a 3-year average rate of TB of less than 5.0 per 100,000 and 3% (12) reached the WHO pre-elimination rate of less than 1.0 per 100,000.

This is a practical resource aimed at both clinical and non-clinical professionals involved in the management of TB in low incidence areas. It details some of the challenges but also possible solutions to managing TB in these areas, along with examples of best practice. The aim of this resource is to support low incidence areas strengthen their ability to manage TB in their community.

This resource was prepared with the support of the 'TB in Low Incidence Areas Task and Finish Group' of the [Collaborative TB Strategy for England, 2015 to 2020 \(1\)](#), the members of which are listed in [Appendix 1](#).

Introduction

In 2015, in response to the high rates of TB in England, PHE and NHS England jointly launched the ‘Collaborative Tuberculosis Strategy for England, 2015 to 2020’ (1). In line with the World Health Organisations (WHO) End TB Strategy (2), the Collaborative TB Strategy aimed to achieve a year-on-year reduction in TB incidence, a reduction in health inequalities associated with TB and eventually eliminate TB as a public health problem in England.

Since the launch of the Collaborative TB Strategy in 2015, England has seen a 29% decline in TB incidence (TB Annual report 2020) (3), the lowest number of TB cases and rates ever recorded and is now classified as a low incidence country by WHO.

The WHO defines a low incidence area as an area with less than 10 cases per 100,000 population per year (Framework towards TB elimination in low incidence countries) (4). As TB rates in England decline, more local authorities will become low incidence areas and the content of this document will become even more relevant.

In 2011, 8,250 cases of TB were reported in England, an incidence rate of 15.6 per 100,000 population. This was the highest incidence of TB since the early 1980s. The incidence of TB has fallen significantly since 2011 with most new cases resulting from infection acquired outside the UK and only about 25% of cases from transmission in England. Provisional data for 2020 suggests that there were 4,131 TB cases in England, a rate of 7.3 per 100,000.

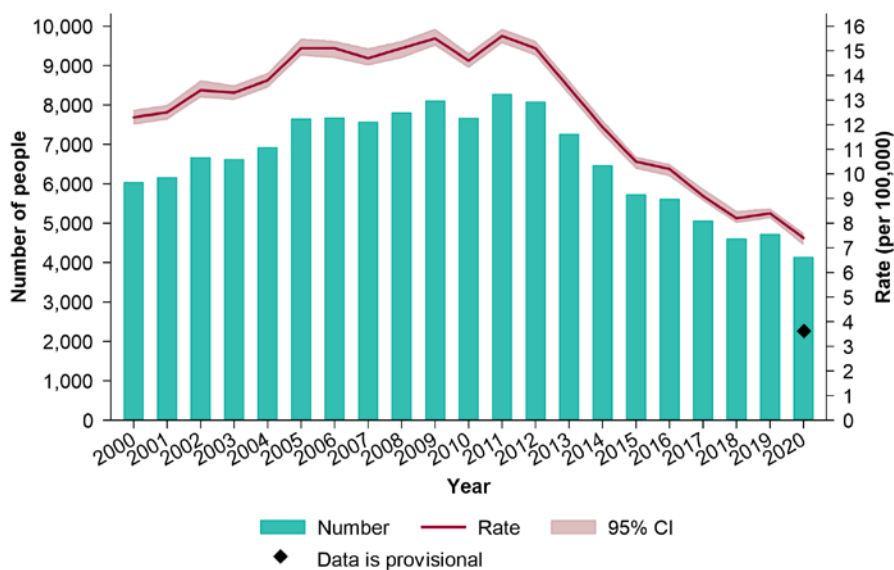


Figure 1: TB case numbers and rates in England, 2000 to 2020. The graph shows the decline in TB incidence in England from a peak of 8,250 cases in 2011 to just over 4,000 cases in 2020.

There is a nearly 50-fold difference in the rate of TB between local authorities with the highest and lowest rates of TB. Within London, the incidence rate in the local authority with the highest rate is over 8 times that of the lowest. Many local authorities now have very low rates of TB; in 2019 nearly 59% had a 3-year average rate of TB of less than 5.0 per 100,000 and 3% (12) reached the WHO pre-elimination rate of less than 1.0 per 100,000 (3).

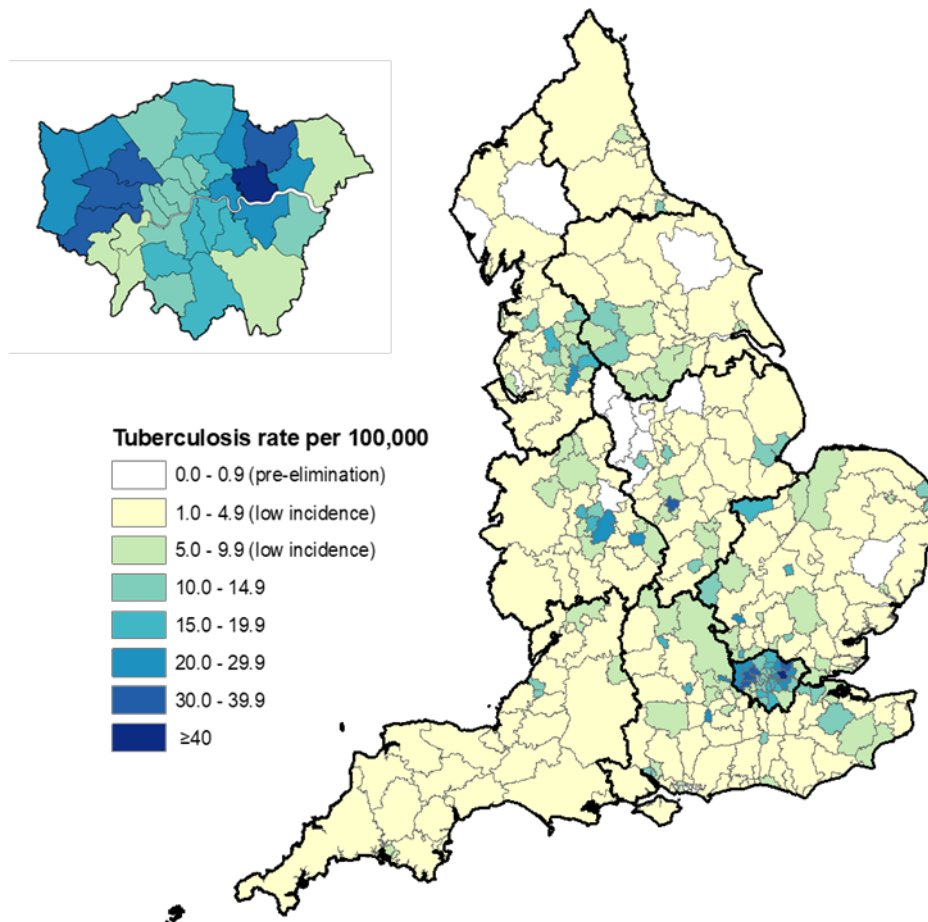


Figure 2: Three-year average TB rates by local authority, England, 2017 to 2019. This figure shows a map of the average TB rates by, local authority, the vast majority (59%) have rates of less than 5 per 100,000. Hot spots can be seen in major cities¹.

If TB rates in England continue to decline areas of low incidence will become increasingly common. It is recognised that caring for TB patients in these areas brings particular challenges and this resource has been written to support regional TB Control boards, clinical teams and other partners better meet the needs of patients in low incidence areas. The resource discusses the challenges posed by low incidence, suggests some solutions and then shares some exemplars of best practise.

¹ Source: Enhanced Tuberculosis Surveillance system, ONS data extracted: March 2020 Prepared by: TB Unit, National Infection Service, Public Health England.

Challenges specific to low incidence areas

Low incidence areas are important as most areas in England have low TB incidence, according to the WHO threshold of 10 per 100,000 population. The proportion of the country which is low incidence is increasing as the incidence of TB decreases nationally. If we are to reach the WHO goal of eliminating TB as a public health problem, we need to ensure that more areas in England become low incidence areas.

Some of the challenges to TB control in low incidence areas include:

- many TB services have no specialist TB nurse
- the TB workforce is smaller, therefore impacted by leave, sickness and TB incidents
- there is less cross cover/surge capacity
- there can be a lack of clinician engagement as TB is only a small part of their workload
- more likely to be a lack of specialist clinical advice
- low attendance at TB network and cohort review meetings as TB is often only part of a clinician's or nurse's workload, so less opportunity for joint learning
- little or no support for complex case management whether to overcome language barriers, treat multidrug-resistant TB (MDR-TB) patients or manage TB outbreaks
- less experience of managing incidents
- resources for incident management are often less/not available as it is a rare event
- less TB knowledge in health care workers and health protection teams and so more TB awareness raising is needed
- provision of Directly Observed Therapy (DOT) can be difficult, also obtaining funding for Video Observed Therapy (VOT) can be difficult
- diagnostic delay is more likely due to a lack of awareness of the disease in patients and clinicians and due to the geography/distances to services
- healthcare delays are more common and there is a greater likelihood of fragmented diagnostic pathways
- lower incidence means less exposure to cases, so GPs and others are less aware
- lack of resources due to small case numbers
- low priority given to TB by Clinical Commissioning Groups (CCGs) and local authorities can mean fewer resources
- difficult to commission an appropriate specialist service for very small numbers

This resource will now address some of these challenges in more detail.

Lack of organisational focus on TB control

Low incidence areas have a smaller number of TB cases. Outside London, the median number of people notified annually in each CCG area is 11, with only around half of these having potentially infectious pulmonary TB.

The current model of TB commissioning in England requires each CCG to commission TB services for their population, but CCGs tend not to have the resources to dedicate to the commissioning of a specialist service for such a small number of TB patients. While PHE and NHS England and NHS Improvement (NHSE and NHSEI) has developed a nationally recommended TB service specification, there is insufficient resource to implement or monitor this specification in most parts of the country given the small cohort of patients treated under it.

In many areas, TB is bundled into a respiratory service block contract. The difficulty of setting local or national mandatory targets around TB given the small annual patient cohort means that the service is rarely visible at a senior level within Trusts or among commissioners. Indeed, in some low incidence areas, when approached by TB teams or PHE colleagues, several CCGs have been unaware that they commission TB services, assuming this to be part of the local authority's public health offer.

The same issue recurs across most organisations involved in control of TB at the local level: for example, there are typically too few TB cases in most local authority areas for TB control to be considered a high priority for council public health teams, and third sector organisations in such areas will seldom encounter TB patients.

Without a change in approach, working towards TB elimination is likely to exacerbate this problem, as the cohort of patients is likely to shrink.

This is not simply an issue at the local level: the [NHS Long Term Plan \(5\)](#) makes no mention of TB, despite a prior commitment to work towards elimination. Similarly, none of the emerging Integrated Care Systems in areas of England where TB incidence is low has identified elimination of TB as a priority.

Less system funding for TB treatment and care

For most TB service providers funding is based on the number of people treated for TB, as only treatment of cases is captured in the NHSE and NHSEI National Tariff Payment System. Necessary activity such as screening of contacts, awareness raising activity, and pro-active screening of high risk populations is not captured.

It is well known that eradication of the 'final few' cases of an infectious disease in any population takes disproportionate effort and cost, yet this funding model means that areas with the least

number of cases receive the least funding, and given standing overhead costs probably have less available resource to spend directly on patient care.

In addition, TB teams in low incidence areas often take on tasks which those in high incidence areas do not. For example, in many low incidence areas, all TB testing is undertaken by the TB team. This includes, for example, testing to exclude latent TB before starting patients on biologic treatments for unrelated conditions. In higher incidence areas, TB testing is often more widely available, and hence not funnelled through the TB team alone. This further stretches resources in low incidence areas, but under the current system of funding may be necessary to maintain the viability of specialist TB services in the context of low case numbers.

Geographical access to services harder

Most rural areas in England have a low incidence of TB, which can result in small TB teams working across large geographical areas. For example, TB nurses working in the North of Tyne area may need to make a round trip in excess of 100 miles to visit a patient at home, and patients may have to travel a similar distance to attend TB clinics.

This is clearly not a problem unique to TB. Nonetheless, it presents a challenge to delivering the standard model of TB care in England, particularly considering the complex social backgrounds of many TB patients and the requirement for many healthcare interactions over a prolonged period.

Similarly, there can be difficulties in low incidence areas in promptly accessing supplies of TB medications. Community and hospital pharmacies do not necessarily keep drugs commonly used to treat TB in stock due to infrequent use, though are able to obtain them within 24 hours. From a 'system' point of view, a 24-hour delay in accessing this medication may not be of great concern; however, from a 'clinical' point of view, it can represent the difference between explaining and starting TB medications in clinic, and having to do so at a separate appointment requiring prolonged travel on the part of the case or the TB nurse, especially where directly observed therapy is required.

Resilience of TB nursing services needed

The treatment of TB in England is highly reliant on the skills and expertise of specialist TB nurses. As a natural consequence of the low case numbers, many services are reliant on lone workers in this role, who are frequently working less than full time.

These arrangements lack resilience, with no appropriate cover provided for periods of annual leave or sickness, or for periods of high demand: it is noted that a single challenging TB case could easily take up the time available for management of the entire TB case load, especially in services reliant on lone workers. Given the model of high-intensity TB nursing which is often

required for cases with complex social factors, and the well-documented risks of interruptions to TB treatment, services which lack resilience present a clear clinical and public health risk.

In some areas, informal 'cover' arrangements between teams associated with TB such as infection control or between services associated with a different Trust have emerged: formalising such arrangements might be beneficial in improving resilience and workforce planning.

In addition, small teams often do not have enough capacity to manage the response to TB incidents where large numbers of people need to be screened. There are reports of occasions when such incidents have had a substantial knock-on impact on routine TB services, leading to vastly increase waiting times for screening of contacts of known cases.

These problems are exacerbated by TB incidents naturally being rare in low incidence areas, which means that there can be a sense of 'reinventing the wheel' in response to each incident. For example, the Consultant in Health Protection co-ordinating the incident response may have little prior experience of TB incidents, or there may be a need to make the case to a CCG from scratch about the importance of funding screening exercises. These problems can lead to the response being delayed, and lessons from each incident not being properly shared.

Some low incidence areas have no commissioned community TB service at all, despite having an (albeit low) burden of TB in the community. It is difficult to envisage how such areas can meaningfully work towards TB elimination with no commissioned TB service.

Less training and development opportunities for TB nurses

Access to training for TB nurses in low incidence areas can be a major challenge. There is no single course or accreditation available to educate newly appointed TB nurses on the adoption of this specialist role, or to provide a solid didactic base on which to build experiential learning.

Many acute Trusts will not routinely fund attendance at courses and conference outside of the home region, yet TB-specific courses are not typically held in low-incidence regions. This can make accessing relevant continuing professional development opportunities difficult.

The small number of TB nurses in low incidence areas also means that few potential future TB nurses are exposed to this specialist area of work, and so are unlikely to consider it as a career option. This problem can be exacerbated by TB nurse teams being located in isolating parts of Trust structures: many teams are not part of the nursing directorate within Trusts, and some are not employed by Trusts at all. TB nurses in England typically work with whole families, including both adults and children. Many TB nurses are not specifically trained in paediatric nursing.

Late identification of TB patients

In areas where TB is rare, there is naturally lower community awareness of TB. This applies both among healthcare workers, who may not consider the diagnosis, and among members of the public, who may not recognise that they are at increased risk or may not present due to social stigma. Low community awareness may contribute to greater diagnostic delay in low incidence areas. The smaller TB workforce in low incidence areas may not have the necessary resource to undertake awareness-raising activities, and the low case numbers mean that this is unlikely to be a priority for CCGs or local authority public health teams.

A greater proportion of TB cases in low incidence areas are patients who are older, white and born in the UK. They may not therefore fit the stereotypically described TB patient, in part because a lot of educational focus and awareness raising of TB concentrates on new entrants as opposed to older UK-born individuals. This too may contribute to diagnostic delay.

Programmatic TB screening has been introduced in areas with higher incidence of TB but has not been funded in areas of low incidence. This decision has proven controversial among the TB workforce which has expressed concerns about the equity of this decision at the individual patient level (that is, people with an identical personal risk of TB are eligible for different screening approaches according to where they live). In practice, this means that screening of new entrants for latent TB in most low incidence areas is reliant on GPs and other healthcare workers identifying that patients are at high risk and arranging testing. This does not work well, partly as it would be naturally expected that knowledge of TB risk factors is lower in areas with fewer TB cases.

Less experienced TB medical workforce

Across England, it is generally accepted that uncomplicated TB cases should be managed at the District General Hospital level rather than being managed in tertiary referral centres.

This approach is challenged by the expectation that TB patients should receive specialist care. Given the small case numbers in low incidence areas, it is unlikely that many District General Hospitals see more than a very small handful of cases of TB per year, and individual respiratory consultants will manage care for only a proportion of the cases treated in a given hospital.

In other clinical specialties, there is often a defined case throughput required to maintain the specialism of a service. It is not clear what level of throughput is required to assure enough expertise to manage TB cases. It may be the case that hospitals and physicians in low incidence areas may not be able to maintain their skill given the low throughput.

A review to determine the minimum number of people affected by TB required to provide a 'safe' TB service and maintain staff expertise is needed to ensure appropriate and the best possible care for patients.

Variation in practice

As a result of historical attempts to increase detection of people with TB, there is widespread variation in practice across England in terms of TB detection. These represent extensions to, or different interpretations of, National Institute for Health and Care Excellence (NICE) guidance. For example, in some areas, contact tracing is undertaken for extrapulmonary TB, on the basis that close contacts are likely to have had similar exposures, rather than because of the risk of direct transmission. In other areas, university students from high incidence countries are proactively screened for latent TB on university campuses. It is not clear if these approaches are effective (or cost-effective) in controlling TB in the community.

Possible solutions to improving TB care in low incidence areas

Despite the challenges posed by a low incidence of TB there are some excellent examples of innovation in managing patients in low incidence areas around the country. Summarised below are ways in which TB Services and TB Control Boards could and do work to meet the needs of patients, clinical teams and others in low incidence areas.

A summary of possible solutions to improve TB care in low incidence areas

Support the TB workforce

To support an often dispersed TB workforce in low incidence areas, consider:

- cross cover between services and between similar nurses, for example, infection control nurses and TB (see page 17)
- better support to TB nurses, through TB nurse peer support fora, an active national nurse group and national nurse conferences
- regular TB nurse question and answer question and answers (Q&As) with lead TB consultant, for example, at cohort review or following a networking event
- use the TB Control Board lead TB clinician as a local source of TB advice and support
- TB nurse peer support fora: these fora provide peer support, sharing of best practise and discussion between nurses from high and low TB incidence areas
- support nurse networks or nurse forums including admin, room and lunch to ensure TB nurses get the support they need
- nurse and clinical networks to share best practise and provide educational opportunities
- more support for TB nurses in training/technology/travel bursary's

- review roles undertaken by TB Service team and consider separating out what a TB nurse should do, and what can be done, by others

Technology to support remote meetings and educational events

To support remote meetings and low staff numbers, the following could be used:

- Microsoft Teams, Zoom or other software that supports virtual meetings
- webinars of educational events

Training provision for the TB workforce

To support training of the TB workforce in low incidence areas the following could be used:

- staff educational events to bring all stakeholders together to network and learn (for example, supra-cohort review in East of England followed by a TB nurse network meeting)
- regional education events to allow sharing of current, best practice and networking
- the annual national TB nurse conference
- online modules prepared nationally, for example, the Royal College of General Practitioners (RCGP) [e-learning module](#)
- sharing of resources such as the [Under-served Population Resource](#)
- national TB conferences and training courses (see further detail on page 18)

TB awareness raising

To raise awareness of TB locally the following could be employed:

- TB nurses could offer to run teaching sessions in GP surgeries using the [TB Specialist Nurse Resource Pack](#) from the TB Alert website – sharing local epi data and highlighting who is at risk locally
- TB nurses/clinicians could offer to run TB awareness raising sessions at local primary care continuing professional development (CPD) events - these opportunities can also be used to raise awareness of other infectious disease issues including bloodborne viruses and their testing or flu vaccination
- clinicians could raise awareness of TB in GP commissioners by visiting them and sharing the national TB clinical specification and policy
- to get local authority engagement, request TB is placed on the local Health and Wellbeing Board agenda, and then visit the local Director of Public Health with local data from the [PHE Fingertips tool](#) or use local authority profiles produced by the PHE Field Service for high incidence boroughs

- consider using TB awareness raising materials such as the:
 - **TB Specialist Nurse Resource Pack** (slide set) available on the TB Alert website
 - **RCGP e-learning module**
 - up to date/clear leaflets (TB Alert and PHE)

Delivery of care

The following options could improve the delivery of care.

1. Virtual MDTs: an exemplar of this is the Manchester Paediatric TB Network that links District General Hospital (DGH) clinicians and nurses with a specialist paediatric TB clinic for advice via a weekly virtual MDT, supported by admin and technology - this has been hugely successful, supportive of patients, doctors and nurses in low incidence areas and provides a learning opportunity for all. It would be possible to replicate this across any part of TB, for example, MDR-TB.
2. Linking TB with other co-morbidity screening such as BBV to increase efficiency.
3. Increase links to high incidence areas to gain from expertise held there.
4. Strengthen relationships between physicians and nurses across patch allowing ad-hoc clinical discussion for complex cases (for example, picking up the phone).
5. Consider integration of TB services across STP/ Integrated Care Systems (ICS) footprint to increase capacity and flexibility of services.
6. Link teams from high incidence areas with those in low incidence areas to support incident management when needed.
7. Many TB networks have combined cohort review across high and low incidence areas – enabling sharing of good practice.
8. Consider specialist cohort reviews established for paediatric cases and MDR-TB.
9. Standardise approach to care - consider template letters from Health Protection Team (HPT)/TB Services to increase efficiency – share existing literature from TB Alert.
10. Standardise/streamline approach to incidents and provide template letters, standard information sheets, among others.
11. Use technology to support patient care, for example, use apps to support virtual appointments such as AttendAnywhere or commission the London Find and Treat team to support VOT for complex/hard to reach patients.
12. Develop a memorandum of understanding between the CCG/ICS/local authority and HPT to ensure all engage and solve housing problems for homeless TB patients.
13. Consider whether a national model like the British Thoracic Society MDR forum, for more general TB case management discussions, might be helpful to those managing TB in low incidence areas.

Models of care that provide better support in low incidence areas

1. Embed a single handed TB nurse in the hospital infection control team, provide all with training so that there can be cross cover when the TB nurse is on leave.
2. Develop surge capacity arrangements with larger services in higher incidence areas to provide capacity during incidents in low incidence areas by cross-charging to cover.
3. 'Car in the community', – TB nurse runs their patient follow-up from a car.
4. Service delivery through a 'hub and spoke' model.
5. Virtual MDTs, – linking district general hospital clinicians to a TB specialist in a tertiary referral centre, for example, the Paediatric Network in Manchester.
6. Mutual aid/surge capacity commissioning.
7. Offer nurse led TB services.
8. Consider service model and where TB nursing service sits – to consider integration of role with other specialist posts, for example, Clinical Nurse Specialists in Infection, Prevention and Control, infectious diseases or respiratory medicine – to build capacity and some resilience for cross-cover during leave and absence.

Commissioning

1. Rethink commissioning – should TB move to specialised commissioning as incidence in some areas of the country is well below that of other diseases that are already under specialised commissioning.
2. Increase engagement of CCG/ICS commissioners with TB by visiting them and sharing the TB clinical policy and service specification along with local epi from the [PHE Fingertips tool](#) or the local TB Profile sheets produced by PHE Field Services. Then using this introduction, encourage use of the clinical policy and service specification to develop appropriate contracts for TB services.
3. Joint commissioning across a wider footprint STP/ICS or regional if very low incidence.

This resource will now take a few of these solutions and share them in more depth.

Lincolnshire Countywide Community TB Service Project – ‘Car in the Community’

To meet the needs of some of the under-served populations in Lincolnshire (a rural and low incidence area) Lincolnshire Countywide Community TB Service developed a unique way of delivering care, they developed the ‘Lincolnshire Way’, they:

- listen to the patient and helped overcome the challenge of lack of trust in authority, immigrant status and refusal to engage with other services
- care for the patient resulting in 100% adherence and successful treatment
- act by providing high quality, patient centred care
- improve patients’ health and protect that of others.

All this from the comfort of a car, on a street corner in a rural setting!

Following notification of a new patient the Lincolnshire TB Team puts into action a rapid response plan to engage with the patient, maintain contact, promote a trusting relationship, develop communication skills to overcome language barriers so that they can ensure effective treatment and protect the health of the wider community.

The TB team meet patients 3 times a week in a ‘designated place’ so that treatment can be provided. Due to the low incidence of TB and the large geographic patch this care is provided from a car. The TB car is equipped so that clinical/physical assessments, routine blood tests, sputum’s and weight can all be taken. The team can provide an interpretation service, a packed lunch in the absence of paid incentives, and food parcels. In addition, patients can be transported to secondary care for consultant appointments and other investigations. The car replicates the clinic setting and all care is delivered from the car, hence ‘Car in the Community’.

Project Leads: TB Lead, Sue Silvester; TB Nurse, Rachel Rodgers

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Integration of TB Service with Infection, Prevention and Control Service

Chesterfield Hospital created a more resilient TB service by linking a sole TB nurse practitioner in this, a low incidence area, to the hospital infection control team. This created a very effective system ensuring cross-cover.

The TB nurse provided educational and on the job training for the hospital infection control nurses who now share some of the TB nurse workload when the TB nurse is unavailable. This has increased job satisfaction and competence of all nurses and increased resilience within the hospital. As time has passed a recent appointment has been of a TB nurse with Infection Prevention Control (IPC) skills, whose role is infection control with an emphasis on TB.

The service was initiated by a 3-month review of TB service activity; it invested £50,000 into a Service Review and invested in a Band 5 staff nurse and Band 2 admin support and created a TB Clinic Room to deliver nurse led clinics and Bacillus Calmette-Guerin (BCG) vaccines.

This redesigned resilient service model led to:

- a 7-day service inclusive of bank holidays for health care advice
- cover for annual leave, sickness, and education opportunities accessed by nursing staff without compromising patient care
- education delivered to under-served population in the community
- provision of a dedicated neonatal BCG vaccination programme delivered by the team
- provision of multi professional appointments for asylum seekers reducing hospital visits and ensuring consistency / clarity of advice
- no requirement to cancel clinics due to unexpected sickness
- the ability to actively case manage patients in their home
- the ability for 2 staff to visit high risk patients
- continuity of care for patients when admission to hospital is required
- increased job satisfaction
- team support
- the ability to provide TB awareness without impacting on activity
- a robust service

Project Lead: Diane Holland, Deputy Director, Infection Protection and Control / TB Service Lead Nurse

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Approaches to case review and sharing of expertise

'Supra-Cohort Review' in East of England

Supra-cohort review enables case managers to present difficult cases highlighted at local cohort reviews in addition to any MDR-TB cases. It brings together stakeholders across a wide geographic footprint enabling discussion of the more interesting/complex cases and the sharing of lessons learned.

Deepti Kumar (Consultant in Health Protection)

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Clinical TB Champions

Some areas of the country have developed a single, strong clinical TB leader who is seen as the 'go to' person for clinical TB expertise across the region (for example, West Midlands and North East). These areas have found it helpful to have someone with knowledge, skills and influence (even if not direct power) to help the system work more cohesively.

Kate Duffield (TB Programme Manager)

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Health Integration Team

In Yorkshire and Humber, a 'Health Integration Team' has expanded its focus from TB alone to also support testing for BBVs and (crucially) support new entrants with GP registration. The team have taken on additional tasks which fit with TB nurses' skills, but which can also be used to make a solid argument for additional funding. Making the case for targeting 'hard to reach' populations once, rather than on a disease-by-disease basis has helped them expand their service with the support of Barnsley and Wakefield CCGs.

Bev Jones (TB Nurse)

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Virtual Clinics - Manchester Paediatric TB Network

Driven by clinical concerns and feedback from a coroner a North West Regional Paediatric TB Network was developed. Sustained collaboration between doctors and nurses from multiple healthcare Trusts and community teams, adult and paediatric TB experts, PHE, commissioners and charity partners, facilitated an innovative service redesign: a weekly virtual clinic and rolling regional audit, supported by targeted education and networking opportunities has ensured resources are used more effectively to improve quality of care for patients close to home.

Fran Child (Paediatrician) and Suzanne Dixon (North West Paediatric Network Manager)

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Education and Training courses in the UK

There are several TB education and training courses available nationally which are CPD accredited. In areas of low incidence local training may not always be available and these may provide an alternative.

Examples of TB education and training courses.

1. The London Advanced Tuberculosis Course run by Imperial College Healthcare Trust London and PHE. A two-day annual intensive course offering a comprehensive update on the clinical management of TB cases and incidents, epidemiology and TB services.
2. Qiagen TB Clinical and Educational Summit. A one day event held annually in London bringing together experts to share insights and knowledge about the latest developments in TB control.
3. The Royal Society of Medicine Annual Conference providing an update on TB.
4. **Essentials of TB Epidemiology, Clinical Management & Control - Liverpool School of Tropical Medicine**. A three-day course for people who are looking for a rapid update on TB and TB control.
5. **Fundamentals of Tuberculosis - Liverpool School of Tropical Medicine**. This distance-learning course has been developed as an introduction to TB for clinical practitioners from all settings. It covers TB infection and disease, clinical assessment and management, prevention and control.

In addition, there are often regionally led updates through meetings, workshops and peer review.

Conclusions

If TB rates in England continue to decline, areas of low incidence will become increasingly common. This document outlines the many challenges faced by those working in low incidence areas but also shares some solutions and some of the innovations developed to overcome these challenges.

More broadly commissioning TB services at-scale could lead to better quality commissioning and service resilience. For example, using the opportunity of Integrated Care System (ICS) development to create single teams with shared local knowledge and TB expertise to work collaboratively across geographical boundaries. Nurses in low incidence areas need to be recognised and hosted in an appropriate part of the organisation. This is important for development, for organisational governance of nurses, and to increase the visibility of TB nursing as a nursing specialty.

Specialist TB nursing teams contain highly skilled staff with many skills applicable beyond the TB Service. To ensure resilience of the TB nursing workforce in a low incidence area one answer could be to broaden the workload of TB nurses, resulting in the need for more staff (such as in the Yorkshire 'Health Integration Service') or to encourage TB nurses to share these skills more widely through the training of similarly broad skilled professionals who can then be drawn on when surge capacity is needed such as during a TB incident or outbreak (for example, Lincolnshire example of training up GP practice nurses to support TB incidents).

Consideration clearly needs to be given to the best approach to CPD and training. Virtual / online access to events and courses is useful for people who cannot travel and has become increasingly available and accessible during the coronavirus (COVID-19) pandemic. It is, however, also important that staff are enabled to travel where necessary at a reasonable frequency to meet with colleagues as networking and informal discussions are an important addition to more formal 'knowledge acquisition'.

Consideration also needs to be given to focusing public health structures and interventions on populations, rather than diseases. A lot of TB work has a disease-specific focus. However, it is more likely to be successful (and cost-effective), particularly in low incidence areas, if targeted at populations in an integrated way using a multi-morbidity disease model involving, screening and active case finding for diseases such as TB and BBVs.

If we are to reach the WHO goal of eliminating TB as a public health problem, we need to ensure that more areas in England become low incidence. The content of this resource is a starting point but more work is needed to take appropriate action on the back of it.

Appendix 1: Members of the TB in Low Incidence Areas Task and Finish Group

TBCB Area	Member of Task and Finish' group	Organisational Affiliation
South East	Gemma Ward	Public Health England
South West	Charles Irish Nuala Whitehead	Public Health England Portsmouth Hospitals University NHS Trust
East of England	Deepti Kumar Siân Stinchcombe Sohail Ansari Margaret Holland	Public Health England Cambridge University Hospitals Foundation Trust Southend University Hospital NHS Foundation Trust Buckinghamshire Healthcare NHS Trust
West Midlands	Kate Duffield Caryn Cox Kathryn Cobain	Public Health England Herefordshire Council Worcestershire County Council
East Midlands	Gail Beckett Sue Silvester Vanessa MacGregor	Public Health England Lincolnshire Community Health Services NHS Trust Public Health England
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Appendix 2: Abbreviations

BBV	Bloodborne viruses
BCG	Bacillus Calmette-Guerin (Anti-TB Vaccine)
BTS	British Thoracic Society
CCG	Clinical Commissioning Group
CPD	Continuing Professional Development
DGH	District General Hospital
DOT	Directly Observed Therapy
GP	General Practitioner
HPT	Health Protection Team
ICN	Integrated Care Network
ICS	Integrated Care Systems
IPC	Infection Prevention Control
MDR-TB	Multidrug-resistant tuberculosis
MDT	Multi-Disciplinary Team
NHS	National Health Service
NHSE and NHSEI	NHS England and NHS Improvement
NICE	National Institute for Health and Care Excellence
PHE	Public Health England
RCGP	Royal College of General Practitioners
STP	Sustainability and Transformation Partnerships
TB	Tuberculosis
TBCB	Tuberculosis Control Board
UK	United Kingdom
VOT	Video Observed Therapy
WHO	World Health Organisation

Appendix 3: References

- (1) Public Health England. '[Collaborative Tuberculosis Strategy for England 2015 to 2020](#)' (viewed on 25 March 2021)
- (2) World Health Organisation. '[The END of TB STRATEGY](#)' May 2014 (viewed on 25 March 2021)
- (3) Public Health England. '[Tuberculosis in England: 2020 report](#)' (viewed on 25 March 2021)
- (4) World Health Organisation. '[Towards TB Elimination: An Action Framework for Low Incidence Countries](#)' (viewed on 25 March 2021)
- (5) NHS. '[NHS Long Term Plan](#)' (viewed on 25 March 2021)

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