NICE National Institute for Health and Care Excellence

NICE Pathways

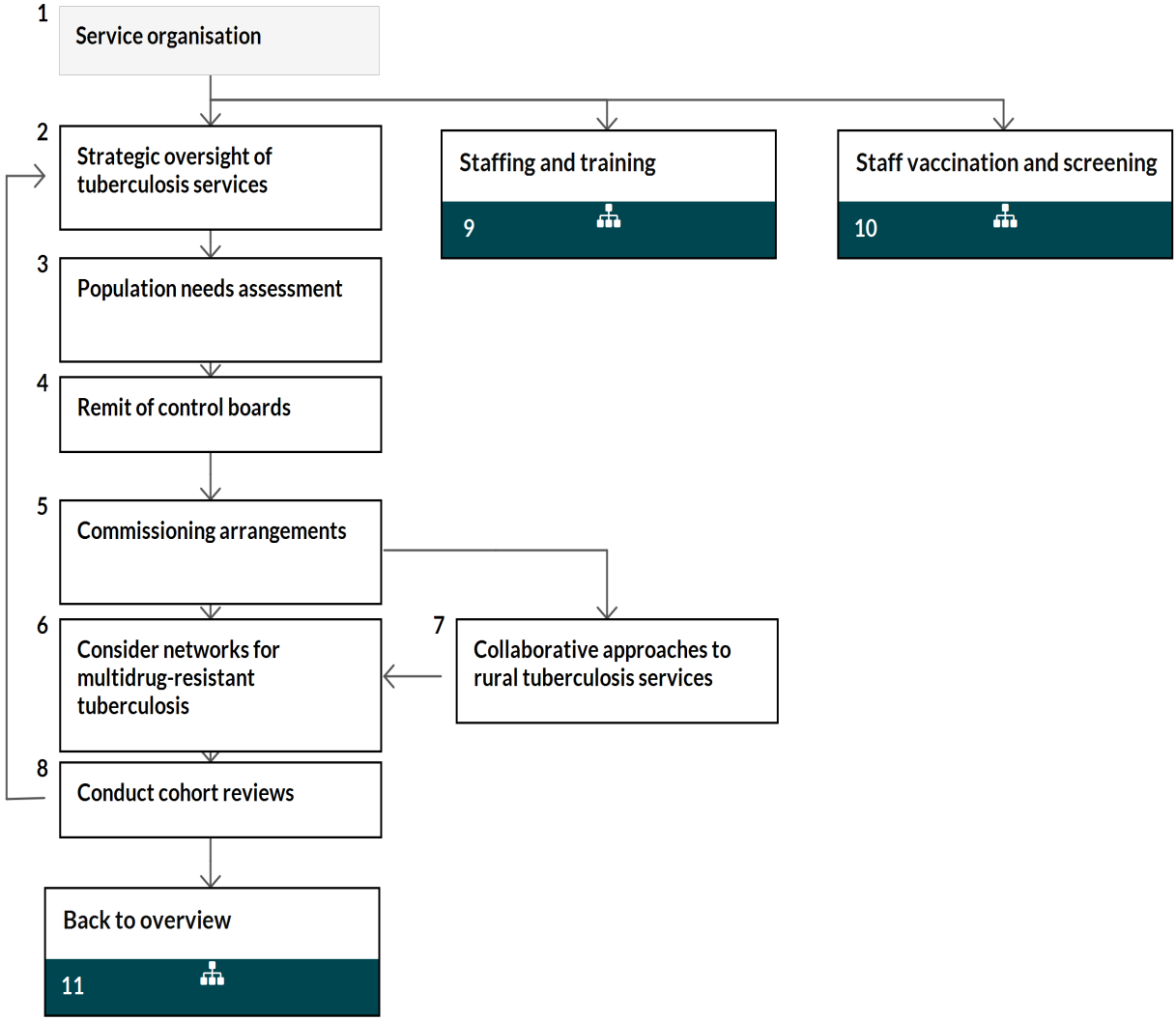
Tuberculosis: service organisation

NICE Pathways bring together everything NICE says on a topic in an interactive flowchart. NICE Pathways are interactive and designed to be used online.

They are updated regularly as new NICE guidance is published. To view the latest version of this NICE Pathway see:

http://pathways.nice.org.uk/pathways/tuberculosis
NICE Pathway last updated: 05 November 2020

This document contains a single flowchart and uses numbering to link the boxes to the associated recommendations.



1 Service organisation

No additional information

2 Strategic oversight of tuberculosis services

Public Health England, in partnership with NHS England, should take responsibility for national oversight of TB prevention and control activities. This includes setting up TB control boards [See page 14].

Public Health England and NHS England should consider working together to establish control boards in agreed geographical areas and employ appropriate staff.

Public Health England, working with the Local Government Association and their special interest groups, should consider working with national housing organisations such as the Chartered Institute of Housing, Homeless Link, Sitra and the National Housing Federation to raise the profile of TB. This is to ensure people with TB are considered a priority for housing.

3 Population needs assessment

Directors of public health, in discussion with local health protection teams, should ensure that TB is part of the joint strategic needs assessment.

Directors of public health should provide commissioners of TB prevention and control programmes and TB control boards [See page 14] with local needs assessment information annually using data provided by Public Health England.

Commissioners of TB prevention and control programmes should ensure services reflect the needs of their area, identified by needs assessment. Health and wellbeing boards should ensure that local TB services have been commissioned based on local needs identified through needs assessment.

Directors of public health and TB control boards should use cohort review [See page 12] and other methods to collect data on the following, to inform local needs assessment:

- Number of annual notified TB cases (see Public Health England's enhanced TB surveillance data and annual 'suite of indicators').

- Size, composition (for example, age and ethnicity) and distribution of local at-risk groups.
- Indices of social deprivation.
- Local statutory and non-statutory services working with these groups.
- Organisation of local TB services, including the composition and capacity of the local multidisciplinary TB team (see the results of local audit) and location of services. This may also include data to support evaluating the need for integrated TB/HIV services including joint clinics.
- Numbers needing enhanced case management [See page 12].
- Numbers receiving directly observed therapy from the start of, or at any point during, treatment (see Public Health England's enhanced TB surveillance data).
- Evidence of recent transmission (for example, using DNA fingerprinting or surrogate markers such as number of cases in children under 5 years (see Public Health England's national TB strain typing service).
- Completeness and yield of contact investigations. This includes: proportion of sputum-smear-positive cases with 0, 5 or more contacts identified; proportion of identified contacts clinically assessed; and proportion of contacts with latent TB infection who successfully complete treatment.
- Active case-finding initiatives, incident contact investigations [See page 12] and identification of latent TB in high-risk groups [See page 13].
- Treatment outcomes for everyone grouped according to social risk factors and by the use of directly observed therapy (including rates of loss to follow-up and treatment interruption – see Public Health England's enhanced TB surveillance data).
- Local education and awareness-raising programmes for under-served groups [See page 15], professionals and practitioners working with them.
- Views and experiences of people with TB, carers and the services working with them.

Local needs assessments should also be equity proofed [See page 13] to assess the potential effect of planning, commissioning and policy decisions on health inequalities (see NICE local government briefing on health inequalities and population health.

4 Remit of control boards

TB control boards [See page 14] should be responsible for developing a TB prevention and control programme based on the national strategy and evidence-based models.

TB control boards should plan, oversee, support and monitor local TB control, including clinical and public health services and workforce planning.

TB control boards should assess services in their area, identify gaps in provision and develop

plans to meet these, including:

- undertaking a workforce review to support local or regional commissioning of TB services to meet the needs of their population
- supporting development of appropriate services and pathways to improve access and early diagnosis
- negotiating arrangements to cover the cost of additional services to address specific gaps in current TB control arrangements.

TB control boards should consider integrating TB and HIV services, joint clinics and training opportunities.

TB control boards should ensure cohort review [See page 12] is undertaken at least quarterly, and the results are fed back to local clinical and TB networks. These should be agreed by accountable bodies such as clinical commissioning groups, trust management, regional Public Health England and centre directors and local authority directors of public health as agreed, all of whom should make sure appropriate action is taken.

TB control boards should enable full and consistent use of national guidelines including:

- ensuring the needs of all people with TB, particularly under-served groups [See page 15], are addressed
- ensuring contact tracing [See page 12] arrangements are appropriate to the needs of the population (see contact tracing and testing)
- assuring themselves that TB control in low-incidence areas is established and delivered appropriately
- assuring themselves that multidrug-resistant TB is managed appropriately (see managing active TB) and mechanisms are in place to ensure:
    - there is sufficient clinical expertise available to manage cases
    - regional multidrug-resistant TB networks take account of expert advice.

TB control boards should develop links and partnerships and establish agreed relationships and lines of accountability between TB control boards and local clinical and TB networks. This includes engaging with other key stakeholders to ensure universal coverage of TB control efforts.

TB control boards should collaborate with their local and regional partners. They should agree and establish regular monitoring, surveillance and reporting arrangements with all partners to support needs assessment and regular audit and evaluation.

TB control boards should ensure there is sufficient capacity available to them to manage a

sudden increase in demand such as:

- TB contact investigations [See page 12] (such as incidents in congregate settings)
- large scale active case-finding initiatives in under-served groups in the community
- outbreaks in a variety of settings or sites where transmission risk may be high, including but not limited to schools, workplaces, hostels and prisons.

To set up, monitor and evaluate a TB control programme, TB control boards should:

- agree plans within their partnerships to assess local services against the service specifications
- develop plans and quality standards to secure improvements
- establish quality assurance mechanisms and regular audits including but not limited to cohort review for all aspects of the TB control board partnership plans.

See also staffing and training.

5 Commissioning arrangements

Clinical commissioning groups and local authority public health teams working in partnership with Public Health England and NHS England should consider collaborative commissioning arrangements through TB control boards [See page 14]. This could, for example, include working with 1 or more clinical commissioning groups to cover a major metropolitan district, region or TB control board area taking into account:

- local TB incidence
- local at-risk populations and their movements across different geographical areas
- existing service configurations for organisations involved in TB prevention and control
- the need to share services, such as mobile X-ray facilities and outreach incident teams across different geographical areas.

TB control boards should develop TB prevention and control programmes working with commissioners, Public Health England and NHS England. The board should include clinical, commissioning (from clinical commissioning groups, local government and the voluntary sector) and public health leaders and people with TB or groups who advocate on their behalf from across the control board area. This may include identifying a lead clinical commissioning group, which should be led by an executive director of that commissioning group working with the board. Feedback mechanisms between local commissioning groups and the TB control board should be developed.

An executive director of local commissioning groups, working with the local director of public health or another nominated public health consultant, should lead implementation of the programme in their locality. The lead should ensure a comprehensive prevention and control programme is commissioned to support the level of need and that they work with the control board regularly.

Working together through TB control boards and local networks, commissioners, local government and Public Health England should ensure TB prevention and control programmes set up multidisciplinary TB teams [See page 14] to provide all TB services. They should ensure that local strategy and service commissioning focuses on an end-to-end pathway [See page 12].

Working together through TB control boards, commissioners and Public Health England should ensure the TB prevention and control programme is informed by relevant NICE guidance and developed in collaboration with clinical services. It should also be informed by the standard minimum data set collected through local needs assessment and service audit.

Working together through TB control boards, commissioners and Public Health England should ensure the TB prevention and control programme targets all ages, including children, and covers all aspects of TB prevention and control, including but not limited to:

- active case-finding (contact investigations [See page 12] and identifying latent TB in high-risk groups [See page 13])
- awareness-raising activities
- standard and enhanced case management [See page 12] (including providing directly observed therapy and free treatment)
- finding people lost to follow-up [See page 14] and encouraging them back into treatment
- incident and outbreak control
- monitoring, evaluating and gathering surveillance and outcome data.

Working together through TB control boards, commissioners, Public Health England and the voluntary sector should ensure TB prevention and control programmes take account of the need to work with other programmes targeting specific high-risk groups, such as under-served groups [See page 15]. Examples include programmes focused on the health of asylum seekers and refugees, under-served children, homelessness [See page 14] and housing, offenders and people who misuse substances.

Commissioners should consider commissioning support and advice to all groups diagnosed with TB irrespective of whether they are under-served.

Commissioners should ensure NHS England's safe staffing principles are applied when commissioning TB services[1],[2].

6 Consider networks for multidrug-resistant tuberculosis

TB control boards [See page 14] should consider setting up a regional multidisciplinary TB network to oversee management of multidrug-resistant TB. This could:

- Identify and designate regional expert centres.
- Ensure all healthcare professionals who suspect or treat a case of multidrug-resistant TB are informed about and have access to specialist advisory services for multidrug-resistant TB. This includes the designated expert centre in their regional network and may also include the national advisory service for multidrug-resistant TB (currently provided by the British Thoracic Society).
- Ensure all cases of multidrug-resistant TB are discussed at the regional multidisciplinary TB team meeting in the local clinical network.
- Formally consider and record the advice from the specialist advisory services for multidrug-resistant TB provided by the designated regional expert centre or the national advisory service for multidrug-resistant TB.

7 Collaborative approaches to rural tuberculosis services

Commissioners in rural areas (working with TB control boards [See page 14]) should consider collaborative approaches to deliver and manage TB services. They could, for example, set up a network including areas with high and low incidence of TB.

8 Conduct cohort reviews

TB control boards [See page 14] and prevention and control programme leads should initiate, audit and evaluate cohort reviews in their commissioning area. Quarterly cohort review [See page 12] meetings should take place in the area covered by the programme. Combine these meetings with others if possible, or use technology to make it easier for clinicians and case managers to attend.

TB case managers should present standardised information on each case, including: demographic information, HIV test results, pre-treatment and ongoing status (clinical, laboratory, radiology), adherence to treatment and the results of contact investigations [See page 12].

[1] The staffing ratios used in Public Health England and NHS England's collaborative tuberculosis strategy for England (published in 2015) came from NICE's guideline on tuberculosis: identification and management in under-served groups (published in 2012).

[2] NICE's 2012 guideline on tuberculosis: identification and management in under-served groups recommended 1 WTE case manager per 40 incident cases needing standard management and 1 WTE case manager per 20 incident cases needing enhanced case management.

TB case managers and key allied professionals from the TB prevention and control programme should attend cohort review meetings. This should include the lead clinician (who may or may not be the case manager [See page 12]). Either a paediatrician with experience and training in the treatment of TB or a general paediatrician with advice from a specialised clinician should be present when cases of children with TB are presented.

The chair of the cohort review should not work for any of the TB services included in the review. Examples of possible chairs include a public health consultant, a specialist physician or a senior TB nurse, preferably from a different geographical area. Alternatively the chair could be a representative from the local Public Health England health protection team or the TB control board.

Multidisciplinary TB teams [See page 14] in conjunction with Public Health England units, should collate and present cohort review data on TB treatment and the outcome of contact investigations [See page 12] at the review meetings. In addition, progress towards national, regional and local service targets should be presented.

TB control boards, directors of public health and local public health consultants should ensure outputs from the cohort review feed into the needs assessment for TB services. TB control board directors should attend the cohort review at least once a year.

TB case managers should feed back promptly to multidisciplinary TB teams on issues identified as a result of cohort review. The results of the cohort review should be collated locally and agreed by the chair before being fed back to TB control boards, commissioners and health and wellbeing boards regularly and via needs assessment.

People participating in a cohort review should review the results and evaluate local services (for example, auditing adverse outcomes, rates of culture confirmation, treatment completion rates or time to diagnosis).

9 Staffing and training

See Tuberculosis / Tuberculosis services: staffing and training

10 Staff vaccination and screening

See Tuberculosis / Tuberculosis services: staff vaccination and screening

11 Back to overview

See Tuberculosis / Tuberculosis overview

Involves follow up of a person suspected or confirmed to have TB. It needs a collaborative, multidisciplinary approach and should start as soon as possible after a suspected case is discovered.

Standard and enhanced case management is overseen by a case manager who will usually be a specialist TB nurse or (in low-incidence areas) a nurse with responsibilities that include TB. Depending on the person's circumstances and needs, case management can also be provided by appropriately trained and supported non-clinical members of the TB multidisciplinary team.

Cohort review is a systematic quarterly audit of the management and treatment of all TB patients and their contacts. The 'cohort' is a group of cases counted over a specific time, usually 3 months. Brief details of the management and outcomes of each case are reviewed in a group setting. The case manager presents the cases they are responsible for, giving the opportunity to discuss problems and difficulties in case management, service strengths and weaknesses, and staff training needs.

Clinical investigations (diagnostic testing) of people identified as having had significant exposure to a case of TB, including tests to diagnose latent or active TB. The aims of contact investigations are to:

- detect active TB earlier to offer treatment and prevent further transmission
- detect latent TB that may benefit from drug treatment
- detect people not infected but for whom BCG vaccination might be appropriate.

Identifying people who may have come into contact with a person with infectious TB and assessing them for risk of significant exposure to TB. The aim is to find associated cases, to detect people with latent TB and to identify those not infected but for whom BCG vaccination might be appropriate.

The pathway from awareness raising and primary prevention, through diagnosis to treatment completion incorporating all aspects such as contact tracing and other infection control mechanisms, for example, access to isolation facilities. This includes governance and commissioning considerations so that a comprehensive clinical and public health service is developed and delivered across any agreed geographical footprint.

Management of TB for someone with clinically or socially complex needs. It starts as soon as TB is suspected. As part of enhanced case management, the need for directly observed treatment is considered, along with a package of supportive care tailored to the person's needs.

Tools such as health equity audit and health impact assessment have been used systematically to assess the potential effect of all policies, programmes and activities (including those without an explicit health focus) on health inequalities. Equity proofing helps ensure all policies and programmes address the social determinants of health and health inequalities. Including a health equity audit as part of the joint strategic needs assessment can help local authorities and their partners to:

- develop strategy and plans according to need
- identify and work with community and health partners
- commission activities based on the best available evidence
- implement interventions to tackle inequity.

Used in this interactive flowchart to mean adults, young people and children from any ethnic background, regardless of migration status who are at increased risk of having or contracting TB. This includes:

- people classified as under-served
- people identified as contacts according to the case finding recommendations
- new entrants from high-incidence countries
- people who are immunocompromised.

Close contacts are people who have had prolonged, frequent or intense contact with a person with infectious TB. For example, these could include household contacts – those who share a bedroom, kitchen, bathroom or sitting room with the index case. Close contacts may also include boyfriends or girlfriends and frequent visitors to the home of the index case. Depending in the circumstances, occasionally co-workers are classed as close contacts although they are more usually classed as social contacts.

A **new entrant** is anyone coming to work or settle in the UK. This includes immigrants, refugees, asylum seekers, students and people on work permits. It also includes UK-born people, or UK citizens, re-entering the country after a prolonged stay in a high-incidence country. A **high-incidence country** or area has more than 40 cases of TB per 100,000 people per year. Public Health England lists high incidence countries and areas of the UK on its website.

In this interactive flowchart, **immunocompromised** refers to a person who has a significantly impaired immune system. For instance, this may be because of prolonged corticosteroid use, tumour necrosis factor-alpha antagonists, antirejection therapy, immunosuppression-causing

medication or comorbid states that affect the immune system, for example, HIV, chronic renal disease, many haematological and solid cancers, and diabetes.

For the purposes of TB control, a broad and inclusive definition of homelessness has been adopted that incorporates overcrowded and substandard accommodation. It includes people:

- who share an enclosed air space with people at high risk of undetected active pulmonary tuberculosis (that is, those with a history of rough sleeping, hostel residence or substance misuse)
- without the means to securely store prescribed medication
- without private space in which to self-administer TB treatment
- without secure accommodation in which to rest and recuperate in safety and dignity for the full duration of planned treatment.

People are defined as 'lost to follow up' if they cannot be contacted within 10 working days of:

- their first missed outpatient appointment (if they are on self administered treatment)
- their first missed directly observed therapy appointment (if they are on directly observed therapy).

A team of professionals with a mix of skills to meet the needs of someone with TB who also has complex physical and psychosocial issues (that is, someone who is under-served). Team members will include:

- a social worker
- voluntary sector and local housing representatives
- TB lead physician and nurse
- a case manager
- a pharmacist
- an infectious disease doctor/consultant in communicable disease control or health protection
- a peer supporter or advocate
- a psychiatrist.

A partnership of mixed professionals and lay people who have experience of leading, commissioning, managing or supporting people with TB. Board members are likely to include:

- the voluntary sector
- housing representatives

- TB specialists and other clinicians
- consultants in communicable disease control or health protection
- peer supporter and advocate groups
- clinical commissioning groups
- executive officers
- local government commissioners
- an independent chair.

This list is not intended to be exhaustive; membership should be determined based on an area's needs, agreements and commissioning arrangements.

Used in this interactive flowchart to mean groups of adults, young people and children from any ethnic background, regardless of migration status. They are under-served if their social circumstances, language, culture or lifestyle (or those of their parents or carers) make it difficult to:

- recognise the clinical onset of TB
- access diagnostic and treatment services
- self-administer treatment (or, in the case of children and young people, have treatment administered by a parent or carer)
- attend regular appointments for clinical follow-up.

The groups classified as under-served in this interactive flowchart are:

- people who are homeless
- people who misuse substances
- prisoners
- vulnerable migrants.

Groups of children identified as potentially under-served include:

- unaccompanied minors
- children whose parents are under-served, including vulnerable migrants
- children whose parents are in prison or who abuse substances
- children from gypsy and traveller communities
- looked-after children.

For the purposes of TB control, a broad and inclusive definition of **homelessness** has been

adopted that incorporates overcrowded and substandard accommodation. It includes people:

- who share an enclosed air space with those at high risk of undetected active pulmonary tuberculosis (that is, those with a history of rough sleeping, hostel residence or substance misuse)
- without the means to securely store prescribed medication; without private space in which to self-administer TB treatment
- without secure accommodation in which to rest and recuperate in safety and dignity for the full duration of planned treatment.

Substance misuse is defined as intoxication by – or regular excessive consumption of and/or dependence on – psychoactive substances, leading to social, psychological, physical or legal problems. It includes problematic use of both legal and illegal drugs.

Prisons include any state prison establishments, including young offender institutions.

Vulnerable migrants may include undocumented migrants and those with no recourse to public funds. Some refugees, asylum seekers and new entrants to the country may also fall into this category.

Glossary

Active case-finding

(systematically identifying people with active or latent TB using tests, examinations or other procedures)

Latent TB

(infection with mycobacteria of the M. tuberculosis complex in which the bacteria are alive but not currently causing active disease (also known as latent TB infection))

Multidrug-resistant TB

(TB resistant to isoniazid and rifampicin, with or without any other resistance)

Outbreak

(there is no robust, widely accepted threshold for an outbreak of a disease, but in practical terms an outbreak is the occurrence of an unusually high number of cases in associated people,

in a small geographical area, or in a relatively short period of time)

Treatment interruption

(a break in the prescribed anti-TB regimen for 2 weeks or more in the initial phase, or more than 20% of prescribed doses missed intermittently)

Sources

Tuberculosis (2016 updated 2019) NICE guideline NG33

Your responsibility

Guidelines

The recommendations in this guideline represent the view of NICE, arrived at after careful consideration of the evidence available. When exercising their judgement, professionals and practitioners are expected to take this guideline fully into account, alongside the individual needs, preferences and values of their patients or the people using their service. It is not mandatory to apply the recommendations, and the guideline does not override the responsibility to make decisions appropriate to the circumstances of the individual, in consultation with them and their families and carers or guardian.

Local commissioners and providers of healthcare have a responsibility to enable the guideline to be applied when individual professionals and people using services wish to use it. They should do so in the context of local and national priorities for funding and developing services, and in light of their duties to have due regard to the need to eliminate unlawful discrimination, to advance equality of opportunity and to reduce health inequalities. Nothing in this guideline should be interpreted in a way that would be inconsistent with complying with those duties.

Commissioners and providers have a responsibility to promote an environmentally sustainable health and care system and should assess and reduce the environmental impact of implementing NICE recommendations wherever possible.

Technology appraisals

The recommendations in this interactive flowchart represent the view of NICE, arrived at after careful consideration of the evidence available. When exercising their judgement, health professionals are expected to take these recommendations fully into account, alongside the individual needs, preferences and values of their patients. The application of the recommendations in this interactive flowchart is at the discretion of health professionals and their individual patients and do not override the responsibility of healthcare professionals to make decisions appropriate to the circumstances of the individual patient, in consultation with the patient and/or their carer or guardian.

Commissioners and/or providers have a responsibility to provide the funding required to enable the recommendations to be applied when individual health professionals and their patients wish to use it, in accordance with the NHS Constitution. They should do so in light of their duties to have due regard to the need to eliminate unlawful discrimination, to advance equality of opportunity and to reduce health inequalities.

Commissioners and providers have a responsibility to promote an environmentally sustainable health and care system and should assess and reduce the environmental impact of implementing NICE recommendations wherever possible.

Medical technologies guidance, diagnostics guidance and interventional procedures guidance

The recommendations in this interactive flowchart represent the view of NICE, arrived at after careful consideration of the evidence available. When exercising their judgement, healthcare professionals are expected to take these recommendations fully into account. However, the interactive flowchart does not override the individual responsibility of healthcare professionals to make decisions appropriate to the circumstances of the individual patient, in consultation with the patient and/or guardian or carer.

Commissioners and/or providers have a responsibility to implement the recommendations, in their local context, in light of their duties to have due regard to the need to eliminate unlawful discrimination, advance equality of opportunity, and foster good relations. Nothing in this interactive flowchart should be interpreted in a way that would be inconsistent with compliance with those duties.

Commissioners and providers have a responsibility to promote an environmentally sustainable health and care system and should assess and reduce the environmental impact of implementing NICE recommendations wherever possible.