

testing times

Final report on the role of rapid diagnostics in tackling antimicrobial resistance (AMR)

Testing Times is led by LumiraDx in partnership with the
British In Vitro Diagnostics Association (BIVDA)



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Final report on the role of rapid diagnostics in tackling antimicrobial resistance (AMR)

Testing Times: An introduction

Testing Times focuses on outlining the role of rapid diagnostics in relation to tackling antimicrobial resistance (AMR), with an emphasis on identifying key barriers and challenges in relation to uptake of rapid diagnostics.

Through *Testing Times* we are seeking to bring renewed focus and attention to the value of rapid diagnostics to support clinical decision making, identify learning from the pandemic, and develop next steps and recommendations that can support the use of point of care testing (POCT) solutions – with a focus on primary and community care.

This paper has been informed by a structured interview programme, led by Professor Jonathan Cooke - visiting Professor at the NIHR London In Vitro Diagnostics Co-operative, Department of Surgery and Cancer, Faculty of Medicine at Imperial College London and Honorary Professor in the Faculty of Biology, Medicine and Health, University of Manchester.

This programme has been supported by healthcare professionals, academics and advisors to the Government on AMR, to gather key insights on the current policy landscape and practical challenges on the frontline of care. We would like to thank contributors to the structured interview programme for their participation and valuable insights.

This paper is also informed by discussion at the *Testing Times* Parliamentary roundtable, which was held on 4th July 2022.

“ Now that people are much more aware of rapid diagnostics – we have an opportunity to provide patients with peace of mind. ”

**Doris-Ann Williams, CEO,
British In Vitro Diagnostic
Association**

Rapid diagnostics in the context of antibiotic prescribing

At present, most antibiotics are prescribed in primary care without a definitive diagnosis. This is despite the fact that there are numerous diagnostic technologies that can support prescribing decisions. These include rapid diagnostic tests for Strep A, Influenza A/B and Respiratory Syncytial Virus (RSV), which are all currently available to support antibiotic prescribing decisions in health services.

Another example of effective rapid diagnostic technology is C-Reactive Protein (CRP) point of care (POC) testing. POC CRP can be used to assist clinical decision making as to whether an individual, presenting with symptoms of respiratory tract infection (RTI), needs an antibiotic.

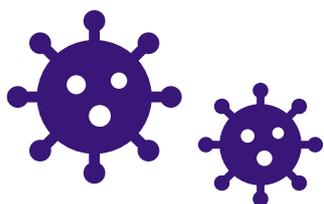
POC CRP testing is an effective tool for triaging patients with respiratory symptoms, reducing the incidence of unnecessary prescribing to patients who would not benefit from an antibiotic.

POC CRP has been shown to reduce antibiotic prescribing by 22-36% for respiratory tract infections (RTI), and 22% for COPD,² making it a significant diagnostic intervention in the context of AMR, with RTI and COPD being key indications for antibiotic prescribing in primary care.

Contributors to the interview programme underlined that, despite various pilots and trials, including more than 10 randomised or cluster randomised clinical trials using CRP alone, the use of POC diagnostics has not been significantly adopted by primary care in the UK. They underlined challenges to adoption including funding and commissioning barriers; practical barriers to implementing and embedding diagnostic technology within primary and community care settings; issues surrounding the acceptance of rapid diagnostics amongst clinicians and the need to ensure available evidence on the effectiveness of rapid diagnostics is appropriately shared.

These reflections on the limited uptake of rapid diagnostics echo the *UK 5 Year Action Plan on Antimicrobial Resistance: 2019-2024*, which underlined that the UK does not make the best use of available diagnostic technology.³ This is despite the fact that POC CRP is widely used in other European countries, such as the Nordics and the Netherlands, with demonstrable impact on antibiotic prescribing levels – these countries having low primary care prescribing rates and strong AMR stewardship programmes.¹

In recent years there have been innovations in diagnostic technology and over the course of the pandemic, health services have increasingly used diagnostic platforms to manage COVID-19 that could support the use of CRP POCT to inform antibiotic prescribing if effectively redeployed across health settings. Going forward, leveraging the potential of these innovations, which are an asset currently held by NHS services, and supporting more widespread use of diagnostic technology should be a central aim of efforts to tackle the threat of AMR.



700,000

deaths per year as a result of antimicrobial resistant infection*



10 million

deaths by 2050 if action is not taken*



with a

\$100 trillion

estimated global cost*

The threat of AMR

AMR has been described as a 'hidden pandemic' and a mounting public health challenge requiring urgent attention and action.⁴

Globally, it is estimated that there are at least 700,000 deaths per year as a result of antimicrobial resistant infection and this is expected to rise to 10 million deaths by 2050 if action is not taken, with an estimated global cost of \$100 trillion.⁵

The scale of the challenge in relation to AMR has been acknowledged by the government in the UK 5 Year Action Plan on Antimicrobial Resistance: 2019-2024. The UK Action Plan sets out a range of objectives in relation to i) reducing the need for and unnecessary exposure to antimicrobials ii) optimising the use of antimicrobials and iii) investing in innovation, supply and access to tackle AMR.³

In May 2022, the government published an addendum to the Action Plan, integrating key learning from COVID-19 in relation to approaches to tackling AMR and revising some of the commitments made in 2019.⁶

A central measure of success in relation to the government's AMR agenda remains a commitment to be able to report on the percentage of prescriptions supported by a diagnostic test or decision support tool by 2024.³ The addendum to the UK Action Plan makes welcome progress via commitments to support uptake of diagnostic technology and to standardise data collection in relation to their use to inform antibiotic prescribing.⁶

The UK Action Plan was informed by the *Review of Antimicrobial Resistance*, led by Jim O'Neill, which reported in 2016. The Review made specific recommendations on the use of rapid diagnostics to inform antibiotic prescribing – underlining that high income countries should make it mandatory for all antibiotic prescribing to be informed by data and testing technology by 2020.⁵ It remains the case that rapid diagnostic tools are not widely utilised or effectively integrated into pathways, representing a significant area for reform and innovation in practice that could progress the AMR agenda.

The impact of COVID-19

Contributors to the structured interview programme underlined that COVID-19 had likely hindered progress on AMR, in part due to the fact that attention and resource needed to be diverted towards the pandemic response.

The pandemic also had an impact on rates of antibiotic prescribing and prescribing practice. Participants in the interviews underlined that COVID-19 had meant some patient cohorts received prescriptions without face to face consultation and a tendency to err on the side of caution with more vulnerable patient groups. Whilst there was an overall decrease in the rate of antibiotic prescribing in the first year of the pandemic, compared to appointment visits the absolute antibiotic prescribing rate increased during the pandemic and has been attributed to inappropriate prescribing resulting from telephone consultations and increased diagnostic uncertainty.⁷ Antibiotic misuse in non-bacterial infections during the pandemic, such as for cases of COVID-19, have been raised as major concerns.⁷

In the wake of the pandemic, Public Health Advisors have stressed the importance of tackling AMR, describing it as a 'hidden' or 'silent' pandemic and seeking to draw parallels between the challenge presented by COVID-19 and the approaching threat of AMR.⁴ One interview participant emphasised that COVID-19 must serve as a lesson in relation to antimicrobial resistance, underlining the need to take preventative action earlier and invest in technologies that can support AMR stewardship.

Beyond this, the pandemic has presented a number of key learnings and opportunities to draw on within the AMR agenda.

Participants in the structured interview highlighted that COVID-19 has led to greater awareness and acceptability of rapid diagnostics, amongst the public and health care professionals.

As one contributor highlighted, the UK is in a 'golden window' to introduce point of care diagnostics more broadly.

This extends to the fact that many secondary care settings will have purchased diagnostic platforms during the pandemic, some of which could now

be redeployed to other settings, such as primary and community care, and used to support AMR stewardship objectives.

A crucial development during the pandemic was the creation of a new informatics infrastructure that was used for surveillance and monitoring of COVID testing, with the system now able to transfer antigen and PCR test results into the patient records of 80-90% of the population. There is an opportunity to leverage this infrastructure to support AMR stewardship, with the potential to expand the diagnostics that are captured within the system and provide improved insights into surveillance of antibiotic prescribing.

At a structural level, the pandemic revealed some of the challenges within the diagnostics sector. One interviewee highlighted that, in comparison to research and development in vaccines, the UK diagnostic sector was more fragmented; received less investment; and was subject to difficult regulatory frameworks – all of which had hindered initial efforts to develop responses and solutions to COVID-19. These points have similarly been made in a recent report published by the Academy of Medical Sciences, which highlighted the need to develop a more 'fit for purpose regulatory process' for diagnostics and a need for greater transparency across the pathway from research on diagnostics, through to implementation in community and health care settings.⁸

Key Challenges and Barriers in relation to AMR and Diagnostics

Embedding the use of rapid diagnostics

A key theme across the interviews was the challenge of implementing and sustaining use of rapid diagnostics in primary care. Several contributors acknowledged that whilst various trials and pilots that have taken place on POC CRP, very few of them have led to ongoing adoption in GP practices.

One participant underlined that embedding the use of a diagnostic platform within the day-to-day workflow was a key challenge, emphasising that diagnostic technology needs to be supported by wider infrastructure.

This provides the necessary assurance for clinicians and managers that the correct governance, training and auditing is in place to support use. They also underlined that embedding technology includes practical challenges, such as decisions regarding where diagnostic platforms are kept within a practice (particularly where practices operate over more than one site).

At a systemic level, another participant reflected that the challenge of practically implementing new technologies into historic health systems was often underestimated, underlining that this will only have been made harder by the additional pressures primary care is facing as a result of COVID-19.

Multiple participants underlined the difficulty in making a business case for diagnostic technology within single practices, stressing that economies of scale and higher throughput of patients were needed to sustain and validate the use of diagnostic platforms. These insights have implications for new service models and pathways going forward.

Despite these practical barriers, it was noted by interview participants that patients do accept the use of rapid diagnostics and can feel reassured by a test that informs clinical prescribing decisions, particularly where the clinical decision is not to prescribe. It was observed that this acceptability will likely increase, in light of the widespread use

of rapid diagnostics during COVID-19 and greater patient familiarity with point of care testing. This acceptability is crucial – interview participants agreed that a key element of tackling AMR is to change patient expectations and demand surrounding antibiotic prescribing, making the reassurance and educational opportunity provided by diagnostic interventions a significant benefit for patient care in the future.

System incentives and guidelines

In 2014, NICE recommended within *Pneumonia in Adults: Diagnosis and Management (CG191)* that GPs should consider using POC CRP testing during the community assessment of suspected Pneumonia (LRTI) and outlined suggested levels of CRP that indicated an infection requiring an antibiotic versus those that did not.⁹

During the *Testing Times* interview programme, participants had mixed views as to the scope of the clinical guideline, with one participant stating that the instruction to consider CRP POCT alongside clinical symptoms was the correct emphasis for clinicians, whilst other contributors underlined the need to make guidance stronger in relation to the use of CRP POCT.

CG191 was withdrawn early in the pandemic for review, in light of the advent of COVID-19 and the need to re-evaluate respiratory infection management pathways during the pandemic. This led to a period where there was no effective replacement NICE guideline in place, although CG191 has since been reinstated, as of July 2022. Whilst it is welcome that the guideline has been reinstated, there is an opportunity to carry out a more comprehensive review of the guideline, with a view to including key patient cohorts, such as those with COPD, within the scope of the guidance and to develop a more robust recommendation on the use of rapid diagnostics to inform clinical decision making.

The Primary Care Respiratory Society (PCRS) recently published a pragmatic guide and algorithm for members on the use of POC CRP for

RTI and COPD patients, which provides valuable guidance to clinicians in relation to using rapid diagnostics to inform antibiotic prescribing decisions for patients with respiratory symptoms. Developments such as this should inform NICE's consideration of the use of CRP within the *Pneumonia in Adults: Diagnosis and Management (CG191)* guideline, to ensure that it reflects best practice and is fit for purpose.

Additionally, participants in the roundtable meeting highlighted that Managing Common Infections guidelines have been expanded to consider diagnosis and, as a consequence, certain rapid diagnostic tests have been referred via those guidelines to NICE for review. Whilst it is welcome that diagnosis is now considered within the guidelines and providing a pathway for NICE recommendation, some stakeholders underlined the limitations in the current assessment process, which does not incorporate a quantitative economic assessment of the impact of AMR. Whilst NICE will qualitatively consider how a diagnostic test may support AMR stewardship, it is a serious shortcoming that NICE do not use robust economic modelling on AMR within decisions to recommend a test that may support a reduction in antibiotic prescribing.

Overall, there is a need to ensure that NICE is taking a robust and comprehensive approach when assessing the use of rapid diagnostics in clinical pathways and integrating an assessment of the social and economic impact of AMR. The recent addendum to the UK 5-Year Action Plan on AMR retains an incentive to develop and evaluate rapid diagnostics,⁶ but there still exists a gap in relation to incentivising the use of existing diagnostic technology and ensuring that clinical guidelines reflect the value of wider uptake.

Funding structures

Interview participants agreed that funding and commissioning arrangements are also a barrier to uptake of rapid diagnostics in primary care. One participant outlined that Clinical Commissioning Groups (CCGs – now replaced by Integrated Care Systems) rarely included funding for rapid diagnostics to inform antibiotic prescribing within local commissioning arrangements – meaning individual practices would incur additional cost in order to introduce platforms. The participant reflected that ultimately, this was a matter of prioritisation for CCGs – in the absence of stronger expectations and incentives at a national level, prioritisation of AMR does not frequently occur.

One contributor underlined the importance of pilots for the use of rapid diagnostics having clear exit strategies agreed with the relevant CCG, so that necessary funding arrangements can be sustained, with a full understanding of the value of diagnostics as compared to the cost. It was noted that, whilst studies have demonstrated the utility of CRP POCT in reducing index prescribing to patients with respiratory symptoms¹ and pilots in primary care have underlined benefits to services, there has been limited sustained uptake – with long-term funding arrangements being a significant hurdle to overcome.

Cost-effectiveness studies have shown that the use of POC CRP can both reduce costs to practices and deliver benefits in relation to unnecessary antibiotic prescribing, compared to current standard practice.¹⁰

This includes evidence that use of point of care testing to triage acute respiratory infection can reduce unnecessary antibiotics and antibiotic related adverse effects, resulting in significant cost savings.¹¹

One interview participant stressed the significance of the system-wide benefits that would likely follow from embedding rapid diagnostics within health services – supporting greater productivity and efficiency across primary and secondary care, whilst also supporting AMR stewardship. They called for analysis of such benefits to be taken forward by the government as a priority. As highlighted above, current approaches to assessing diagnostics for recommendation in clinical guidelines do not make a quantitative assessment of the economic impact of AMR, limiting the extent to which cost-effectiveness can be meaningfully assessed. A system-wide cost analysis has the potential to support a benchmark against which to consider the utility and value of diagnostic tools in the broader context of the impact of AMR.

These reflections on both cost effectiveness and efficiency in health services are particularly meaningful in the context of pressure on health services as they recover from the pandemic and there is an evident platform to utilise diagnostics to support a more efficient use of primary and secondary care resources.

Broader AMR policy

Contributors highlighted that there has been a consistent focus within AMR policy on innovation and the development of new pipeline antimicrobials and new diagnostic technologies, underlining that current available technology can be overlooked.

One participant underlined that diagnostics are one of the most important elements in the fight against AMR, supporting an overall reduction in antibiotic use, where new antimicrobials sustain the risk of drug resistance ultimately developing.

This view was shared by other participants – and is expressed in the UK 5 Year Action Plan on AMR – that available technology is not optimised across health services and more should be done to support uptake of existing diagnostic solutions.

The refreshed commitments for the AMR Action Plan, published in May 2022, provide some welcome progress towards a stronger focus on facilitating uptake of existing technology, whilst also supporting research and development.

Additionally, stakeholders outlined that there are significant differences between the needs of primary and secondary care when it comes to the diagnostic tests that support clinical decision making. In the context of primary care, the use of prognostic tools – ones that enable clinicians to exclude a need for antibiotic prescribing, can effectively support practice, without a need for more specific diagnostic tools that will determine the infection a patient has.

It was underlined that prognostic tools, such as CRP POCT, can be overlooked when a ‘whole pathway’ approach is taken to assessing the value of diagnostics, as there is an emphasis on specific diagnostics that can siphon patients down a particular route of care and treatment.

In primary care, significant progress in AMR stewardship might be made by identifying patients who have a self-limiting infection that does not need antibiotics – without a need to determine the nature of the infection. There is a need to consider the varying needs of particular settings and not just consider how diagnostics fit into a specific pathway, such as for RTIs or UTIs.

Opportunities and Future Areas of Focus

A consistent theme across the interviews and in broader health policy discourse, is the need to manage the pressures on health services, including the challenges currently faced by primary care. Looking to the future – it is important that use of rapid diagnostics is implemented in a way that supports productivity and that the pathways that are developed enable integrated and efficient use of diagnostic technologies.

Integrated care system reforms

The advent of Integrated Care Systems (ICS) was perceived by contributors as an important opportunity, creating a larger footprint across which strategic decisions on AMR can be made and introducing Primary Care Networks (PCNs) as a key structure through which public health issues can be addressed.

A key opportunity that was highlighted was the ability to leverage economies of scale and develop appropriate funding arrangements within new

healthcare systems, that could more effectively support adoption of diagnostic platforms across secondary, primary and community care.

It is likely that ‘place’ within ICS will be a key structure at which effective decisions regarding local AMR stewardship can be made – with places having opportunities to influence how and where funding is invested.

It was underlined that structural reforms to ICSs should alter the decision making process within local and regional health systems, with a greater emphasis on ‘bottom up’ conversations between places and Integrated Care Boards to determine how local needs can be met whilst delivering on ambitions and targets set out in national policy. Crucial to this will be the establishment of AMR Boards within ICSs that will provide reach and continuity across health and care providers and will be able to monitor progress with standardised auditing tools, which are under development in partnership with the national NHS England AMR Programme.

Case Study: Point of Care CRP Testing within Community Respiratory Care

Knowsley Community Respiratory Service, part of the Liverpool Heart and Chest Hospital NHS Foundation Trust, have a rapid response service for COPD patients. As well as providing a telephone triage service and rescue packs (containing antibiotics and steroids) for patients, the nurse team also visit patient's homes. They are able to conduct a clinical examination, check sputum for discoloration, and test for CRP using a fingerstick point of care test. The POC CRP test supports on the spot decision making for the need for antibiotics, as well as repeat testing on the next visit to ensure the therapy is working. This service has enabled a reduction in inappropriate antibiotic therapy, monitoring of acute treatment and changes to that plan, preventing hospital admissions and referral to phlebotomy services for venepuncture, and is well received by the patients.

These AMR Boards will connect into local Infection, Prevention and Control Teams, Prescribing Teams, Diagnostics Leads and Pathology Networks to take forward AMR Stewardship. These stakeholders will have access to an NHS England regional health science lead, responsible for supporting AMR stewardship at a regional level and connecting ICSs back to the central NHS England programme.

Additionally, whilst current incentive frameworks might directly transition from CCGs to ICSs, there is an opportunity to review incentives around antibiotic prescribing and ensure that rapid diagnostics are appropriately represented within these policies and that the ambitions of the 5-Year Action Plan are supported via the incentives operating within new health structures. For example, the 5-Year Action Plan underlines that the NHS England Quality Premium has been an effective means of influencing practitioner behaviour in relation to antibiotic prescribing,³ but there remains scope to develop more robust incentives on the use of rapid diagnostics specifically, within these schemes.

Interview participants underlined the scope for developing hub models for the management of respiratory patients, building on services that were introduced during the pandemic.

Such models would operate above individual general practices, securing the throughput of patients needed and providing economies of scale that can provide appropriate oversight, assurance and auditing within services. One participant expressed optimism in relation to driving forward the use of rapid diagnostics within these new structures, underlining that they provide a platform for innovation and application of learning from the pandemic.

Case Study: Community Hospital and Hospital at Home Service Point of Care CRP Testing

Over the past 8 plus years the Clinical Biochemistry Department at Oxford University Hospitals (OUH) NHS Foundation Trust, has successfully implemented & supported an expanding point of care testing service across a variety of healthcare settings in Oxfordshire, including provision for the local community trust – Oxford Health.

The clinical service model was originally developed around the requirements of ambulatory medicine, and included the rapid assessment of patients, especially elderly patients, for RTI.

These services are based in both the acute trust and community hospitals (e.g., Abingdon Hospital Emergency Multidisciplinary Unit).

A point of care testing service delivered by the team in OUH Clinical Biochemistry provides remote support, focussing on utilising existing resources wherever possible.

Hospital at Home and other mobile services are requesting a greater repertoire of tests, particularly CRP, to bring the same diagnostic testing available in the ambulatory setting into the patient's home.

POC CRP allows rapid assessment of the need for antibiotics in this patient population and reduces the burden on hospital services whilst reducing inappropriate antibiotic therapy.

The role of pharmacy

It is encouraging that NHS England has committed to explore point-of-care testing (POCT) by community pharmacists to help in the drive to conserve the use of antibiotics.¹² Interview participants highlighted that community pharmacy could play a greater role in tackling AMR and utilising diagnostics to inform antibiotic prescribing.

One contributor underlined that, given the workforce deficits in primary care, engaging community pharmacy to support triaging patients with respiratory symptoms was an important opportunity.

Participants outlined a number of studies that are currently underway to examine the use of diagnostics within pharmacy settings and compare efficacy with the management of patients in general practice. Findings from these studies should inform future decisions as to drawing on community pharmacy within ICSs, as part of ongoing efforts to tackle AMR.

Participants acknowledged that there were challenges surrounding the use of diagnostic technology within pharmacies, including the barriers presented by funding structures, but noted that larger pharmacies that would have a high throughput of patients could leverage economies of scale and support general practice where there are significant pressures on services.

Case Study: Pharmacy Point of Care CRP Testing to support GP Consultation

A pilot study was conducted under the Manchester Pharmacy School Community Based Practice Learning programme. Patients who would have received antibiotics for RTI were referred by a GP practice to a local pharmacy for POC CRP testing. Patients who had a CRP of less than 100 mg/L were given a leaflet and told to visit the GP if symptoms did not resolve within 3 weeks. Sixty-three per cent of patients had a CRP value of less than 5mg/L and were deemed to have self-limiting illness and not requiring an antibiotic. Ten percent of patients had CRP greater than 100 mg/L and were recommended an antibiotic. Most CRP tests took an additional 5-10 minutes from the initial consultation with the GP to the patient's total consultation time. Patients found the test useful and would recommend it as it provided reassurance that the symptoms were not serious. This study indicates that community pharmacies and GP surgeries can deliver an effective service together with a high degree of patient satisfaction.



1. Hub models are increasingly recognised as an effective approach to population health management, providing the necessary scale and efficiencies to facilitate innovative approaches to diagnosis. **The Department of Health and Social Care and NHS England should consider the case for supporting the rollout of respiratory assessment hubs with a focus on multiplex testing and rapid diagnostics to manage the growing respiratory pressures on the NHS.**



2. Community pharmacy is increasingly being used to help ease pressures on general practice, for example by providing blood pressure and other health checks to patients. This provides a model for the use of rapid diagnostic technology to inform antibiotic prescribing and triage patients who need further intervention from primary care. **Community pharmacy should be supported to manage patients with symptoms of respiratory tract infections and triage them using rapid diagnostics. The scope for utilising rapid diagnostics within community pharmacy should be considered by Integrated Care Systems within forthcoming strategic plans.**



3. Diagnostics have a crucial role to play in the AMR agenda – a fact that is implicit in the UK 5-Year Action plan ambition to report on the percentage of antibiotic prescriptions that are informed by a diagnostic test or decision support tool by 2024. Given RTI and COPD patients are the recipients of a significant proportion of total antibiotic prescriptions, **NHS England and NICE should consider what new incentives and guidelines are needed to support wider uptake of rapid diagnostics within respiratory pathways.**



4. Integrated Care Systems will have primary responsibility for local strategies in reducing antibiotic prescribing and embedding AMR stewardship initiatives. As these new systems are established, **NHS England and the Department for Health and Social Care must ensure that appropriate incentives and funding are available at an ICS level to facilitate uptake of rapid diagnostic technology and advance towards the UK 5-Year Action Plan objective to report on the percentage of antibiotic prescriptions informed by a diagnostic test or decision support tool by 2024.**



5. Diagnostic platforms were acquired by health systems during the pandemic, to help secondary care services manage COVID-19 infections and to support infection control strategies. As the pressures of COVID-19 ease, these platforms may be eligible for redeployment to support the use of rapid diagnostic technology within the AMR stewardship agenda. **NHS England and Integrated Care Systems should identify where diagnostic systems purchased to respond to the pandemic can be redeployed and utilised to support ambitions set out in the UK 5-Year Action Plan on AMR.**



6. There is a need to provide consistent opportunities to share good practice and the evidence base for implementing rapid diagnostics in primary and community care – both in relation to previous pilots and studies and future evaluation. **NHS England should support best practice and evidence sharing through the development of an AMR ‘knowledge hub’ on the NHS Futures platform.**



7. Behavioural and structural change has occurred as a result of the pandemic, which can potentially be leveraged to support AMR stewardship and the effective use of rapid diagnostics. **Integrated Care Systems, via AMR Boards, should consider how current data infrastructure can be leveraged and how to redeploy diagnostic technology within their footprint to support optimal use of antibiotics for their local populations.**



8. Without action, AMR will become an increasingly severe public health challenge, with far reaching social and economic implications. There is a need to ensure the growing severity and cost of this threat is considered within decisions to recommend the use of diagnostic technology. **NICE should review current approaches to assessing diagnostic tests with a view to ensuring a robust cost effectiveness analysis of the impact of AMR informs future decisions to recommend diagnostic technology.**

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About LumiraDx

LumiraDx is a UK headquartered global medical technology company, founded in 2014. LumiraDx develops, manufactures and commercialises innovative diagnostic testing solutions for community-based healthcare.



About BIVDA

BIVDA (the IVD technologies industry body) is the go-to organisation supporting members to provide cost effective patient outcomes using IVD technologies and innovation to transform patient pathways.

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