

The National Physical Laboratory response to the Health and Social Care Select Committee Inquiry - Delivering Core NHS and Care Services during the Pandemic and Beyond

Context to our response

1. The National Physical Laboratory (NPL) is the UK's National Metrology Institute (NMI), developing and maintaining the national primary measurement standards. NPL is owned and funded (in part) by BEIS. NPL sits at the heart of the UK's National Measurement System (NMS) which provides the UK with a national measurement infrastructure and delivers the UK Measurement Strategy on behalf of BEIS. NPL works in partnership with government, academia, applied research labs and industry to deliver the greatest societal and economic benefit for the UK and the world. As the UK's NMI we represent the UK within an international network of measurement institutes.
2. At NPL we are working with the NHS, academia and industry to tackle some of the world's biggest health challenges and supporting the delivery of priorities set out in the NHS Long Term Plan. This includes the increased drive for earlier diagnosis of disease, innovation and acceleration in the use of precision medicine and personalised medicine, as well as leading the conception of new drugs, treatments and therapies.
3. In healthcare, good measurement improves productivity, quality and safety; it underpins public confidence and is vital to innovation. NPL provides the infrastructure essential for the safe delivery of radiotherapy through the provision of primary standards and the dissemination of traceable dosimetry.
4. Our submission to the Health and Social Care Select Committee sets out examples of where we feel our expertise in measurement science and metrology can be helpful to the NHS and wider health and life sciences system, specifically looking at data, clinical outcomes and exploratory testing moving forward past the COVID-19 pandemic.

Metrology to support the NHS during the pandemic and beyond

5. NPL provides the infrastructure that underpins the provision of radiotherapy in the UK and the use of radiopharmaceuticals. Ensuring that this service is delivered, to enable the safe delivery of cancer treatment is essential. We continue to work with pharmaceutical and medical technology companies that are part of the NHS supply chain to ensure they receive the support that they need.
6. Through the National Measurement System, we are working to develop the metrology tools needed to improve data quality, curation of data and implementation of AI/machine learning to accelerate diagnosis of disease, for example through digital pathology.
7. As part of our response to COVID-19, NPL is working with our clinical and industry partners to support a wide range of activity including the Government's ventilator challenge, novel oxygen generation and monitoring, vaccine development, antibody testing, standardisation

and validation. We are supporting the development and provision of Personal Protective Equipment; and using our data capability to provide data analysis support to UK hospitals. We are also working closely with NHS clinical colleagues to support the delivery of optimised and safe patient care after the COVID restrictions begin to be lifted.

8. Supporting the NHS through, and past the COVID pandemic is complex, but we feel there are a significant number of opportunities emerging from learning to date that would positively impact on future NHS care management and delivery. Within this there are areas where NPL can help to support this activity going forward for example:
 - a. **Accelerating the approval process for medical devices and equipment regulation:** We are working with the Medicines and Healthcare products Regulatory Agency looking at opportunities for pacing the regulation and validation process for new medical devices. We are jointly exploring the use of a 'NADCAP' style¹ approach to registration and NPL are advising on the benefits, risks and regulatory boundaries of this approach to ensure in the longer term the benefits of faster registration aren't lost.
 - b. **Repurposing of treatments** – We feel there are some benefits in exploring the longer term and wider utilisation of new or repurposed treatments or therapies; an example is of one trust using drugs usually administered to patients intravenously for stroke and myocardial infarction, as a nebulised method for thrombosis in COVID patients. There are some opportunities to use metrology to support further testing and analysis in this space.
 - c. **Hospital optimisation - a COVID response:** A recent announcement from Simon Stevens requires NHS Trusts to 'zone' their hospitals in response to COVID, thus moving the concept of patient and visitor flow from one of access to one of safety. There will be some obvious challenges to hospitals managing this effectively, especially given the 'complex' nature of hospital estates. We think there are some interesting opportunities looking at how hospitals can use existing data (for example CCTV and clinic attendance data) to operationalise this optimisation work quickly and safely.
 - d. **Hospital optimisation - cancer diagnosis and treatment:** NPL directly supports the NHS to deliver both conventional and new radiotherapy treatments through the provision of primary standards and the dissemination of traceable dosimetry. The referral to treatment target for cancer is for the patient to be seen within 2 weeks, and if diagnosed receive treatment within 62 days from the first approach. We think there are some opportunities to use existing data on attendances, treatments and capacity to optimise their approach and build in 'spike' resilience as hospitals are 'repacked' to address a likely surge in cancer diagnosis and treatments.
 - e. **Vaccination Development, Diagnostics, Metrology and Validation:** To support the government's drive to increase testing for COVID-19 we are supporting the development of coronavirus antibody tests, focusing on assay development, and device development. We are also supporting efforts to develop effective vaccines, in collaboration with the National Institute of Biological Standards and Control. We are keen for our expertise in measurement science and metrology to be continued to be utilised fully in this space.

¹ <https://p-r-i.org/nadcap/>

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