YHEC's research as part of the Government's COVID-19 recovery strategy

The Government published a recovery strategy for COVID-19[1] in May 2020. This sets out the response to the pandemic in the UK, following the initial phase designed to contain, delay and mitigate the outbreak. The document provides 14 supporting strategies and those with relevance to YHEC's work are:

NHS and Care Capacity and Operating Model

- Compliance and cost-effectiveness of smartphone urinalysis albumin screening for people with diabetes
- Economic evaluation of eReception
- Independent evaluation of Babylon GP at Hand
- Falls prevention ROI assessment
- The Older Adult's NHS and social care return on investment tool
- Statistical analysis of the impact of telecare on the use of social care for older people in Lancashire County Council
- The impact of loneliness on health and quality of life

Protecting Care Homes

- Economic analysis of care homes new models of care vanguard
- Use of copper in care homes and other older care settings

Increased Scientific Understanding

- The economic assessment of an environmental intervention: discrete deployment of copper for infection control in ICUs
- Development of an early economic model to explore the cost-effectiveness of genomic sequencing for MRSA
- Systematic review of the effect of delayed appropriate antibiotic treatment on the outcomes of patients with severe bacterial infections

Treatments and Vaccines

- Economic evaluation of interventions to increase flu vaccine uptake
- Review of patient-reported outcome measures for influenza
- Point of care testing for influenza
- Preparation of a manuscript about the secondary health care burden of influenza in England
- Preparation of a manuscript about the cost-effectiveness of a High Dose Trivalent Influenza Vaccine

[1] HM Government: Our Plan to Rebuild: The UK Government's COVID-19 recovery strategy. May 2020.

NHS and Care Capacity and Operating Model

"…the Government will seek innovative operating models for the UK's health and care settings, to strengthen them for the long term and make them safer for patients and staff in a world where COVID-19 continues to be a risk. For example, this might include using more tele-medicine and remote monitoring to give patients hospital-level care from the comfort and safety of their own homes. Capacity in community care and step-down services will also be bolstered, to help ensure patients can be discharged from acute hospitals at the right time for them."

"…recognising that underlying health conditions and obesity are risk factors not just for COVID-19 but also for other severe illnesses, the Government will invest in preventative and personalised solutions to ill-health, empowering individuals to live healthier and more active lives."

"…the Government will continue to bolster the UK's social care sector, to ensure that those who need it can access the care they need outside of the NHS. The Government has committed to invest £1bn in social care every year of this Parliament to support the growing demand on the sector. By having an effective social care system the NHS can continue to discharge people efficiently from hospitals once they no longer need specialist medical support, helping us to keep NHS capacity available for those who need it most."

Compliance and cost-effectiveness of smartphone urinalysis albumin screening for people with diabetes

Economic evaluation of eReception

Independent evaluation of Babylon GP at Hand

Falls prevention ROI assessment

The Older Adult's NHS and social care return on investment tool

Statistical analysis of the impact of telecare on the use of social care for older people in Lancashire County Council

The impact of loneliness on health and quality of life

Protecting Care Homes

"…the Government is accelerating the introduction of a new service of enhanced health support in care homes from GPs and community health services, including making sure every care home has a named clinician to support the clinical needs of their residents by 15 May. The NHS is supporting care homes to take up video consultation approaches, including options for a virtual ward."

Economic analysis of care homes new models of care vanguard

Use of copper in care homes and other older care settings

Increased Scientific Understanding

"…better scientific understanding of COVID-19 will help us act more precisely and confidently to limit its spread…"

The economic assessment of an environmental intervention: discrete deployment of copper for infection control in ICUs

Development of an early economic model to explore the cost-effectiveness of genomic sequencing for MRSA

Systematic review of the effect of delayed appropriate antibiotic treatment on the outcomes of patients with severe bacterial infections

Treatments and Vaccines

"The government has launched the Vaccines and Treatments Taskforce, which will accelerate the development of a vaccine and treatments and ensure that, if one ever becomes available, it can be produced in mass quantities and safely administered to the public."

Economic evaluation of interventions to increase flu vaccine uptake

Review of patient-reported outcome measures for influenza

Point of care testing for influenza

Preparation of a manuscript about the secondary health care burden of influenza in England

Preparation of a manuscript about the cost-effectiveness of a High Dose Trivalent Influenza Vaccine

Compliance and cost-effectiveness of smartphone urinalysis albumin screening for people with diabetes

YHEC conducted an economic analysis of home urinalysis self-testing among people with diabetes in England. Home urinalysis is a smartphone-based kit which allows users to test their albumin: creatine ratio, a marker for chronic kidney disease (CKD), and send their results to a clinician. YHEC developed a five-state Markov model to assess lifetime costs comparing home urinalysis with standard care, factoring in test sensitivity and specificity. Data showed that home urinalysis improved compliance with testing, thereby increasing the number of chronic kidney disease diagnoses. This in turn saved money by allowing earlier treatment, preventing disease progression and cardiovascular events. The model indicated that home urinalysis self-testing has the potential to save £2,000 per patient over their lifetime.

Economic evaluation of eReception

The Yorkshire and Humber Academic Health Science Network commissioned YHEC to undertake an economic evaluation of eReception, a website-based consultation care navigation system. eReception acts as an alternative to contacting the practice by telephone, walk-in or email. The evaluation comprised interviews with the project team, analysis of data from clinical practice systems, and surveys with staff and patients. The results showed that eReception saved reception staff time and reduced the number of doctor appointments by increasing the number of repeat prescriptions. It was predicted that the costs for eReception would break even if 5% of total contacts were made through eReception. While YHEC were writing this report, early data indicated an increase in the use of 'virtual' technology for contacting services during the COVID-19 pandemic.

Independent evaluation of Babylon GP at hand

YHEC conducted an assessment of the patient and system-level impact of the Babylon GP at hand practice, in collaboration with Ipsos MORI. This is a 'digital first' service set up in a primary care practice in London, primarily through a mobile app and video consultation. Although a review of primary and secondary care data was inconclusive on the impact of the intervention on patient outcomes, the review found that the practice had lower rates of prescribing of antibiotics and antidepressants compared to similar practices. In terms of the overall impact of GP at hand on the health system, we concluded that any broader roll-out of this type of primary care service would require a fundamental review of the redesign of primary care services before proceeding.

Falls prevention ROI assessment

YHEC produced a Microsoft Excel-based tool to estimate cost-effectiveness and potential return on investment for Public Health England using four fall prevention programs. A systematic literature review was conducted to identify evidence on the four fall prevention programs in elderly people based in the community. YHEC calculated the number of falls in each program compared with the expected number of falls in people who were not part of any program. The downstream events following a fall were obtained from clinical data. The analysis showed that one out of the four interventions could provide a return on investment by freeing up hospital beds from reduced inpatient admissions.

The Older Adult's NHS and social care return on investment tool

YHEC was commissioned by PHE to develop a return on investment (ROI) tool to assess the efficiency of services targeted specifically at older people, to improve their quality of life and/or reduce their need for local authority funded social care. Nine interventions were assessed. YHEC first undertook a literature review and feasibility study to understand the evidence needed to develop the ROI tool. These outcomes were then implemented to develop the ROI tool. The ROI tool could be used to demonstrate the impact of the interventions for geographical populations relevant to local commissioners. The inputs could be modified so that the ROI could be explored when uptake of interventions were changed (i.e. from 30 to 50%). The tool showed that five interventions did not always provide a full financial return on investment, but seven interventions did provide a positive societal ROI.

Statistical analysis of the impact of telecare on the use of social care for older people in Lancashire County Council

YHEC was commissioned by Tunstall to evaluate the economic benefits of using telecare for people in the social care setting in Lancashire County Council (LCC). The aim was to identify, from the perspective of a local health and social care economy, whether the provision of a personalised package of telecare to adults aged 65 and over was preferable to care services without telecare. Social care service user data provided by LCC indicated that use of telecare had the potential to reduce the use of other social care services and consequently avoid costs. The extent of avoided costs equated around £4,500 per year for telecare users.

The impact of loneliness on health and quality of life

YHEC has contributed to a Joseph Rowntree Foundation study into the benefits of a neighbourhood-based approach to combat loneliness in the community. Since the report was published, social distancing and shielding has meant that many more people are at risk of loneliness. Loneliness is strongly linked with poor health, which can have a substantial burden to society, both in terms of quality of life and economic costs due to hospitalisations and other treatment. The original report into the impact of loneliness in the community can be found here: http://qaresearch.co.uk/wp-content/uploads/JRF-Loneliness-report-July-2014.pdf. YHEC's role was to identify and critique different approaches to measuring the quality of life impact of loneliness.

Economic analysis of care homes new models of care vanguard

A telemedicine service model covering 248 care homes across the north of England was rolled out in 2015. YHEC quantified the economic benefits generated by this program by conducting a 'before and after' review of the use of health care resources by the care homes to derive a return on investment estimate. The results showed a reduction in emergency hospital admissions, a marginal reduction in A&E attendances, a reduction in the use of 111 calls, but a small increase in out-of-hours services.

Use of copper in care homes and other older care settings

In addition to our work evaluating the use of copper in hospital settings, we have also provided advice around the use of copper in other settings such as care homes and later life villages.

The economic assessment of an environmental intervention: discrete deployment of copper for infection control in ICUs

YHEC created a model to show the economic impact of installing copper components in frequently-touched surfaces in an ICU. Copper/copper alloy surfaces have been shown to reduce the spread of infections in diverse clinical settings, continuously reducing contamination by over 90%. The model found that replacing frequently touched surfaces with copper equivalents would recoup costs in less than two months. The savings were derived from a reduction in blocked beds and better-directed staff resources.

Development of an early economic model to explore the cost-effectiveness of genomic sequencing for MRSA

YHEC prepared and published an early economic model comparing the cost and benefits of using genomic sequencing in addition to current best practice versus current best practice alone for identifying individuals with MRSA. A decision tree-based approach was used to estimate the reduction in total number of MRSA acquisitions, and hence the cost effectiveness of whole genome sequencing over one year based on an annual cohort of newly admitted hospitalised patients. Data from an ongoing clinical trial was used as the basis of all efficacy estimates. The key conclusion from the study was that the costs saved via the additional cases of MRSA identified more than outweighed the cost of universal genomic sequencing. The estimated cost savings to a typical NHS trust were approximately £750k per year.

Systematic review of the effect of delayed appropriate antibiotic treatment on the outcomes of patients with severe bacterial infections

YHEC carried out a systematic review of the impact of delayed appropriate antibacterial therapy on clinical outcomes in patients with severe bacterial infections. Meta-analysis was used to establish that mortality was significantly lower in patients receiving appropriate therapy without delay compared with those experiencing delay. Mortality was also lower in the no-delay group compared with the delay group in subgroups of studies reporting mortality at 20 to 30 days, during ICU stay, or in patients with bacteremia. No difference was found in time to appropriate therapy between those who died and those who survived, but heterogeneity between studies was high. The review concluded that avoiding delayed appropriate therapy is essential to reduce mortality in patients with severe bacterial infections.

Economic evaluation of interventions to increase flu vaccine uptake

YHEC was commissioned by NICE to investigate how interventions that increase the uptake of the flu vaccination would impact costs to the NHS. Different levels of vaccination were assessed in four population groups compared against the current level of vaccination using a static model. The spread of flu was based on a simple estimation of the extra number of people that would be affected each time that a carer or health and social care worker developed flu. The Committee could then consider what the maximum cost of the intervention could be for it to be deemed cost-effective. The results showed that, for children, clinical risk groups, health and social care workers and a subgroup of carers, interventions that increase the uptake of the flu vaccination were likely to be cost-effective. However, the maximum possible cost of the intervention varied depending on which group was analysed, for example, it was not always cost-effective to increase flu vaccinations among carers.

Review of patient-reported outcome measures for influenza

YHEC carried out a targeted review and critique of different patient-reported outcome measures for influenza. The review was developed to help inform suitable trial design in order to capture appropriate quality of life outcomes for people experiencing influenza. In particular, the review sought to identify outcomes that could be mapped to utility outcomes, in order to allow to estimation of quality-adjusted life year (QALY) outcomes. Statistical analysis was conducted alongside the review to develop an ordinal regression model which allowed the inclusion of baseline differences alongside other predictors such as age and gender.

Point of care testing for influenza

The Oxford Academic Health Science Network commissioned YHEC to undertake an economic evaluation of a point of care testing within emergency departments (ED). The analysis was limited to people who the ED had decided to admit and presented at an ED with flu-like symptoms. YHEC developed a decision tree model using Excel to estimate the incremental costs and benefits of the point of care testing when compared with current standard of care. All inputs were based on published literature or informed by clinical advice. The base-case results of the analysis found that overall point of care testing was cost-saving from a hospital perspective. This was largely attributable to large estimated reductions in length of stay of admitted patients due to earlier identification, treatment and isolation of patients with influenza. This in turn resulted in large reductions of secondary infections that were estimated in the model.

Preparation of a manuscript about the secondary health care burden of influenza in England

YHEC is currently working with a client active in the flu vaccine space to quantify the secondary health care burden of influenza in the UK. We have access to two years of UK health episode statistics (HES) data and are looking to link the relevant ICD-10 codes to appropriate Healthcare Resource Group (HRG) codes to estimate the burden of influenza in all patients as well as key sub-populations (particularly those over 75). The work is currently undergoing peer-review from a reputable journal.

Preparation of a manuscript about the cost-effectiveness of a High Dose Trivalent Influenza Vaccine

YHEC is currently working with a client active in the flu vaccine space to evaluate the cost-effectiveness of a high dose trivalent influenza vaccine (HD-TIV) compared a standard adjuvant trivalent influenza vaccine (aTIV). The model has been developed from a UK healthcare perspective using a decision tree framework including two influenza related outcomes: laboratory confirmed influenza cases, which could result in GP consultation, and hospitalisations that may result in premature mortality. Benefits are quantified using quality adjusted life years (QALYs) with the key output being an incremental cost-effectiveness ratio expressed as cost per QALY gained. Extensive sensitivity analyses were undertaken and the work is currently undergoing peer-review from a reputable journal.