Virtual Solutions for Managing Cancer Care In a Pandemic Era: Lessons from COVID-19

A Rapid Evidence Review

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Joining the dots across health and care

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Abbreviations used in the document:

BAD	British Association of Dermatologists
BAHNO	British Association of Head and Neck Oncologists
BGCS	British Gynaecological Cancer Society
BMA	British Medical Association
BOOS	British Orthopaedic Oncology Society
CBT	cognitive behavioural therapy
CNS	clinical nurse specialist
CRC	colorectal cancer
DNA	did not attend
ESMO	European Society for Medical Oncology
GMC	General Medical Council
HNC	head and neck cancer
HRQoL	health-related quality of life
MDT	multidisciplinary team
MDU	Medical Defence Union
NHS	National Health Service
NICE	National Institute for Health and Care Excellence
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta-Analysis
QoL	quality of life
RCT	randomised controlled trial
RCGP	Royal College of General Practitioners
RCN	Royal College of Nursing
WHO	World Health Organisation

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Purpose

Cancer clinical teams are using virtual methods of communication with patients during the current COVID-19 pandemic. This has been recommended by the NHS and professional bodies as part of public health measures to help control spread of SARS-CoV-2. The Peninsula Cancer Alliance believes use of these methods will continue in the future. Therefore this rapid evidence review was undertaken in order for the Alliance to better understand:

- The impact the pandemic has had on cancer services and patients
- How remote consultation methods are used in cancer care across the whole patient pathway and the effectiveness of these methods
- The experiences of patients and clinicians using them
- Issues relating to impact on health inequalities; ethics and governance, and organisational and workforce requirements

Background

Virtual methods use a range of digital technology and this review has considered those most commonly considered elements of telehealth (also referred to as telemedicine): video consultations, telephone consultations and online consultations. Use of such technology as an alternative to face-to-face engagement between patients and clinicians in primary and secondary care is not new, particularly use of the telephone. There are now several commercial platforms that offer seamless video consultation, which are recommended by NHS Digital for online consultation. However, evidence relating to its use pre-pandemic indicates that uptake has been slow across the NHS sector. Despite a strong policy push from central government to increase its use, most consultations still occur face-to-face. Patients who use the technology like its convenience. However, concerns remain about its use in the long-term. These include use for people with complex problems, possible increase in clinician workload, organisational and IT infrastructure changes, and the influence on health inequalities due to digital exclusion.

Findings

Timely access by patients to care can be crucial for cancer patients. Delays in diagnosis and treatment can have negative impacts on outcomes. The COVID-19 pandemic has had a particular impact on these patients. They have been identified as a vulnerable population for a number of reasons as they can develop severe COVID-19 symptoms, meaning they are at a higher risk of more serious complications from the disease. Healthcare premises could be sources of SARS-CoV-2 infection, and the need to protect all patients and healthcare staff and prevent community transmission has meant significant changes in the way health services are provided. This has affected diagnosis and continuity of care for patients. To mitigate this negative impact, alternative models of care that avoid face-to-face contact between clinician and patient have been sought, and use of digital technology for this purpose has been implemented at scale. Most major cancer organisations have released general guidelines on managing patients with cancer during the pandemic. These have included overwhelming endorsement for the use of telehealth to facilitate communication with patients, to provide continuity of overall management, and to continue to operate MDT meetings. What is lacking from this cancer-specific professional guidance is practical advice about how best to conduct a remote consultation, with most guidance understandably focusing on the overall re-organisation of services.

Evidence shows that clinicians involved in cancer care have been successfully using these technologies in most stages of the cancer pathway for some time. As well as managing cancer patients on the treatment pathway, telehealth solutions have been used for treatment side-effect monitoring and toxicity management, and for the delivery of psycho-educational or psychosocial interventions. Comparative data from a few small RCTs (predominantly for follow-up of patients) show that virtual consultations (video or telephone) are at least non-inferior to face-to-face ones for the various outcomes assessed. Other, less robust data from observational studies across the pathway support these findings.

Studies have consistently found that introducing virtual technologies is feasible and safe, with minimal problems with software and other infrastructure issues. From the patients' perspective, acceptability and satisfaction of support delivered by virtual consultations for cancer patients during or after therapy suggests it is convenient, provides positive personal experiences, enhances accessibility to healthcare professionals in a timely manner, and provides a more relaxed, familiar environment in which to facilitate potentially sensitive health care discussions. The effect of these interventions on clinical outcomes is less well researched and impact on symptoms appears variable. The use of telehealth, particular via video, in palliative care can provide a means of supporting and remotely monitoring patients with advanced illness who wish to remain at home. The consistent limitation to remote consultations, expressed by both clinicians and patients, is the inability to perform a physical examination.

Studies exploring remote solutions to service provision during the pandemic have predominantly been descriptive. However, some evaluative data shows that teleconsultations have been implemented swiftly and comprehensively. Patients do not refuse them and very few patients express dissatisfaction with the switch from face-to-face consultations, with very high satisfaction levels recorded. Patients understand the need for these arrangements at this unusual time and would rather have a virtual solution to maintaining their care than for it to cease. Patients generally perceive it to provide the same standard of care as face-to-face consultations. As seen in studies conducted pre-pandemic, convenience is seen as a major advantage along with accessibility. However, limitations around the ability for physical examination is an issue raised by both patients and clinicians alike.

Clinicians have been generally satisfied with the ability to continue to triage and provide care safely and effectively, even though adjustment is required for new working arrangements. There is evidence that MDT meetings, a key part of cancer care, can successfully be undertaken virtually and some clinicians have expressed a desire to continue this approach post-pandemic. There is no evaluative research exploring the use of remote consultations to deliver bad news during the pandemic. However, recommendations from experienced clinicians have been made for adapting pre-existing well-known models used for breaking bad news to suit virtual consultations.

Provision of alternative solutions to face-to-face consultations needs to consider those patients who are least likely to engage with digital communication. This includes the older population, those who cannot access digital technology due to cost or access issues, those with hearing, sight or cognitive difficulties, and those for whom English is not their first language. Sufficient attention needs to be paid to training for clinicians and patients in the use of digital health technologies to ensure they are used effectively, as well as to re-organising clinical and administrative work to support its implementation. Issues relating to privacy and security, consent, confidentiality, and

information governance and data protection, and how these may be operationalised in virtual situations should not be ignored.

Current evidence shows that there is no "one-size fits all" approach to alternatives to face-to-face consultations; it is highly situation-dependent. Patients' perceptions and views reflect individual personalities and preferences.

Limitations of this review
- The scale of literature concerning alternative solutions to face-to-face consultations conducted in cancer care pre-pandemic means that some publications may have been missed
- The studies reviewed demonstrated a significant heterogeneity in design, populations included and interventions, as well as outcomes measured. This limits the generalisability of the findings
- The quality of studies in this review varied widely but was generally low to moderate

Gaps in the literature
- We do not know which telehealth approaches are best suited to which specific populations at which stage of the treatment pathway, nor when to determine when a face-to-face consultation should be used in preference to a virtual consultation either during the pandemic, or when services return to normal
- Studies describing or evaluating virtual alternatives to face-to-face consultations both pre-pandemic and during the pandemic largely focus on the management of cancer patients from treatment onwards. There is little focus on diagnosis, and especially in delivering bad news
- Patients' perspectives and experiences, whilst featuring widely, have mostly been captured by un-validated and unreliable means. Future research in this field should reflect the need to incorporate a high-quality qualitative component, in order to ensure that the individuality of participants and their experiences are represented
- Cost-effectiveness data in particular is lacking, although there is some limited evidence from a UK perspective that virtual solutions can be a cost saving for patients. Impact on NHS costs is uncertain as is impact on health care utilisation

Virtual cancer care in the future? Beyond the pandemic
The creation of a quality-based, sustainable, and patient-centric virtual cancer care model will require collaboration among the multiple disciplines that provide care to patients with cancer. Many clinicians and professional organisations are advocating this as a goal. Patients and clinicians are generally supportive of virtual approaches. However, perceptions are coloured by the imperative to provide and receive care now, when the alternative would likely disrupt ability to identify new cancer diagnoses and continuity of care for existing cancer patients. Whether patients or clinicians would want it to continue post-pandemic remains to be seen.

1. Introduction

1.1 Purpose and scope

Virtual, alternative solutions to face-to-face consultations in health care have included use of digital technologies for several years. But on 11th March 2020, Tedros Adhanom Ghebreyesus, the Director-General of the World Health Organization (WHO), declared the outbreak of COVID-19 a global pandemic on the basis of its spread and severity[1]. A tiny piece of RNA had altered health care services and their delivery seemingly overnight. Consequently, the pandemic has focused attention on these virtual solutions for the delivery of health services for several purposes:

- To promote individual patient safety
- To promote the safety of clinical and support staff
- To reduce the risk of transmission of the disease
- To maintain continuity of care as much as is practically possible

The response to this pandemic has led to a disruption of routine medical care worldwide, including the spectrum of cancer care along the patient pathway from prevention to palliation, and halting of clinical trials. These patients can be an especially vulnerable population, whose outcomes are dependent on timely and high-quality multidisciplinary interventions[2]. Travel restrictions have made it difficult for some cancer patients to reach the hospital, and the fear of infection while visiting healthcare premises has caused others to cancel their hospital appointments or fail to seek GP appointments for suspicious symptoms, delaying diagnosis[3] [4]. Staffing gaps within oncology departments have arisen because of redeployment and sequestering of healthcare staff to other areas of critical need. Most cancer care cannot be halted until after the COVID-19 pandemic, and therefore, innovative solutions are necessary. In response, healthcare systems have been rapidly reorganising cancer services to ensure that patients continue to receive essential care while minimising exposure to SARS-CoV-2 infection[5].

As part of this reorganisation, the pandemic has led to widespread use of telehealth (telephone, video, online platforms) to conduct clinical consultations and assessments, in order to contribute to public health protection[6]. The Peninsula Cancer Alliance believes that these virtual methods of communication used by cancer clinical teams during the pandemic will become increasingly more common in the future. In order to support the delivery of cancer care, from diagnosis and treatment, to follow-up, and palliative and end of life care, the Alliance seeks to gain a better understanding of:

- Remote consultation methods used across the whole patient pathway, including breaking bad news;
- The effectiveness of these methods;
- The experiences of patients and clinicians using them.

The evidence review informs this work by aiming to:

- Provide an overview of existing alternative solutions to face-to-face consultations;
- Describe the recommendations and guidance from relevant national policy and professional organisations for clinicians and patients for remote solutions during the pandemic, with a focus on cancer care;
- Review evaluations of virtual approaches to cancer care including patient and clinician experiences;
- Review approaches to breaking bad news remotely including training;

- Review potential impact on health inequalities of delivering care remotely;
- Analyse risk management, clinical governance and confidentiality requirements;
- Consider organisational development and workforce requirements of remote consultations.

This review will not consider:
- Remote services for paediatric cancers;
- The reorganisation of clinical care and treatment management due to COVID-19 requiring primary or secondary care attendance by patients;
- Provision of general online cancer-related health information;
- Digital models of patient-led peer support;
- Digital models to promote cancer screening uptake or general cancer awareness;
- Clinical or patient decision support systems;
- Mobile apps or other digital technology for general self-management by cancer patients;
- Digital health behaviour-change interventions to promote healthy living;
- Cancer genetic services.

1.2   Background

1.2.1   Digital health – terminology, definitions and context

A note on the definition of terms used within digital health is necessary in view of its position in relation to telemedicine, telecare, telehealth, mhealth and technology-enabled health. These are terms that may overlap and are sometimes used interchangeably. It is also useful in helping to define the scope of this review, which will not cover all facets of digital health in cancer care.

The focus of this review is on alternatives to face-to-face consultations. There are increasingly emerging definitions of eHealth, digital health etcetera, but interpretations continue to vary widely. eHealth has been broadly defined by the World Health Organisation as "*the use of information and communication technologies for health*"[7] while digital health is described more broadly as an umbrella term that covers a lot of different applications of technology in the health sector. At its most basic level, digital health is about electronically connecting points of care for easier and more secure sharing of relevant health and wellbeing data. The sector has been characterised as arising from the intersection of health and care services, information technology, mobile technology, and as such includes digital products that can monitor, analyse, educate and improve health and wellbeing. From wearable sensors and electronic health records (EHRs) to health apps, connected and digital solutions are becoming more accepted by healthcare professionals and by patients[8] [9]. Ruppar et al provided the following definition of Digital Health in 2017[10]:

"Digital health refers to a vast market of information technology applications, platforms and services leveraged by healthcare providers, payers, med tech and life sciences. Digital health is highly dynamic and fast moving, and sits at the intersection of multiple major vertical markets, including healthcare, the information communication technologies space, automotive, and many others."

Deloitte divided the digital health sector into four subsectors in 2015 (Figure 1). Much of this remains current.
1. Telehealthcare

2. mHealth (or mobile health)
3. Analytics
4. Digitised Systems

Figure 1: Sub-categories of Digital Health in the UK. Adapted from Deloitte UK (2015)
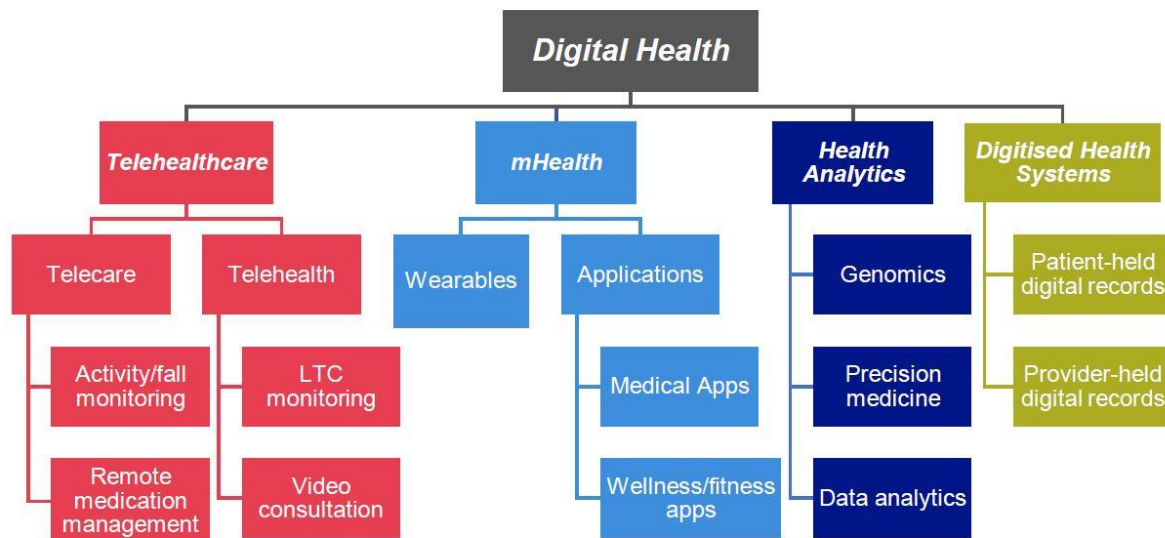
Such technology is transforming a wide variety of aspects of health care. This includes health records, inter-professional communication, and communication between professionals and patients. There are large registries with real time data, medical devices, support for clinical decision-making, care pathways, and opportunities for self-management of their conditions by patients.

This review focuses on technologies related to tele-healthcare as defined by figure 1 and specifically telehealth (or synonyms telemedicine and tele-oncology) only. Note that the term telehealth tends to be used in the European literature, whereas in the US literature, the term telemedicine is more commonly used. Unless citing article titles, the term telehealth has been used throughout this review.

1.2.2   Evidence for alternative approaches to face-to face consultations: An overview
Use of technology as an alternative to face-to-face engagement between patients and clinicians in primary and secondary care, and community services is not new. There has been a strong policy push over several years in the United Kingdom to harness the potential of digital technologies to improve care models and redesign care pathways in a way that improves the accessibility and efficiency of services and maximises the potential for patient self-management[11] [12] [13] [14].

Strategies for remote services include digital modes of access that comprise synchronous models such as voice and video models of communication, including video consulting and telephone consultations. Synchronous text-based communication may include instant messaging and web-based 'live chat' applications. Asynchronous models include text-based models of communication, such as e-mail or online e-consultations via a website[15]. All of these enable patients to access advice and treatment, and to communicate remotely from their home or workplace with their healthcare

practitioners.

Primary care
Evidence suggests that up until the pandemic, use of digital modes of engagement has been low and most general practice consultations still occur face-to-face[15] [16] [17]. However, approaches that utilise telephone approaches (telephone triage; telephone first and bookable telephone consultations) are far more widely embedded in general practice than other online consultations or video consultations[18]. Patients views about services utilising telephone approaches vary widely with some appreciating the convenience and others expressing difficulty getting through on the phone or being unable to schedule when the GP would phone back[19].

Online alternative approaches that rely on an asynchronous questionnaire-based consultation using a web form appear to be more appropriate for discrete and simple patient problems not requiring physical examination, and for administrative purposes than for complex, on-going issues[20]. These forms of consultations tend to be less 'rich' than face-to-face, and digital consultations still often result in a follow-up telephone or face-to-face consultation due to insufficient information for clinical decision-making[21] [22]. Patients report overall general satisfaction with online consultations but indicate better resolutions to issues in face-to-face appointments, which they feel are still needed.

There is evidence of patient demand for video consulting in primary care[23]. Patients appear to like video consulting and value its convenience. However, patients who favour video consulting tend to be younger, are technically competent and experienced in communicating online[23,24]. For simple problems, and where physical examination is not required, video consulting may offer advantages over both face-to-face and telephone consulting. However, video consultations do not appear to be as high a clinical quality as face-to-face consultations, and may be less 'rich' than face-to-face in terms of advice and information[25] [26]. Evidence suggests that GPs are divided in their views on the use of the technology and have concerns about impact on the doctor-patient relationship[27].

Evidence suggests that both telephone and digital (online or video) consultations may lead to more work for GPs[28] [18] [29] [30] [30] with one recent study estimating that digital-first access models using online, telephone, or video consultations are likely to increase general practitioner workload by 25%, 3%, and 31%, respectively[31]. Additionally, these approaches are not necessarily preferred by primary care staff[32] [33]. Technical problems are often reported, particularly with video consulting, and issues around appropriate infrastructure within practices to deliver these solutions is a concern. Successful implementation of alternative approaches in primary care appears dependent on having sufficient workforce, capacity, infrastructure, and resources to implement changes[34].

Importantly, none of the reviewed studies differentiated virtual appointments with usual, preferred GP (or indeed other health professional) as opposed to any clinician within the practice. This matters to patients and is seen as crucial for some people, especially the elderly and those with long term conditions who want continuity of care[35]. Research has shown that people who see the same doctor over time benefit because continuity is associated with reductions in mortality[36], higher patient satisfaction[37] and fewer hospital admissions[38].

There is evidence that introduction of telephone systems, whilst appearing at least cost-neutral to primary care, might increase overall costs to the wider healthcare system. Data on costs of online

solutions is very limited, having not been subject to rigorous cost-effectiveness analyses. Current data suggests that online consultations are not cost saving, certainly at present rates of use. There is no evidence on cost-effectiveness of video consultations[39].

Secondary care

Within secondary care settings, a number of small RCTs and observational studies have shown video outpatient consultations to be acceptable, safe, and effective. These studies included adult patients deemed clinically eligible across a range of different conditions, including diabetes, chronic kidney disease, chronic obstructive pulmonary disease, mental health conditions, chronic pain and in support of patients in care homes[40 41 42 43]. Despite these findings, evidence shows that that video outpatient consultations, in common with other forms of telehealth within secondary care, account for only a tiny fraction of encounters in any specialty, with concerns expressed over reliability, safety and cost-effectiveness[40]. As is the case with the use of these technologies in primary care, the introduction of video outpatient consultations also brings operational and cultural challenges, including the need to develop new ways of organising clinical and administrative work, and train and support both staff and patients in technology use[34 44]. Studies have shown that a remote video link alters how patients and clinicians interact and may adversely affect the flow of conversation. Interactional challenges have been identified: opening the video consultation, dealing with disruption to conversational flow (e.g. technical issues with audio and/or video), and in conducting a physical examination. Clinicians and patients must use communication strategies to negotiate these challenges successfully. Remote physical examinations required the patient (and, in some cases, a relative) to simultaneously follow instructions and manipulate technology (e.g. camera) to make it possible for the clinician to see and hear adequately[45 46].

Robust cost-analyses are lacking. A systematic review of 18 studies (two RCTs, 10 prospective observational studies, six retrospective observational studies) conducted across a range of UK urology sub-specialties found that employing telehealth or virtual clinic strategies may promote financial savings due to reductions in requirement for face-to-face appointments[43]. The largest study in this review was a prospective observational study conducted at a London hospital. It evaluated the use of "virtual clinics" (comprising telephone consultation performed by a specialist nurse or consultant urologist) across a whole treatment pathway (ureteric colic), found that specialist-led virtual clinics for acute ureteric colic significantly reduced time to treatment decision to a median of 2 days[47]. Positive fiscal savings against traditional management pathways for ureteric colic were found. It was estimated that introducing a virtual clinic saved £145,152 for Clinical Commissioning Groups, the equivalent NHS tariff payment of performing 106 ureterostomy (URS) procedures or 211 ureteric stent insertions. Overall, 15,085 patient journey kilometres were avoided.

There is limited evidence from modelling analysis within one UK region, that estimates that a 2.5 minute saving per appointment from moving to virtual provision from traditional outpatient appointments could free up an additional 5,200 hours of appointments from a 10% in all follow-up appointments or 3,728 hours from a 40% shift in the identified specialties. The increased convenience and reduced cost of attending appointments may also positively affect attendance rates. From the patient perspective, if a cost burden of £5.52 per appointment attended (excluding any lost income) is estimated, this analysis projects cost savings for the region's patients ranging from £325k to £973k per annum[48].

A recent "review of reviews" has shown that, for patients specifically with long-term conditions in the home setting, there is no formal evidence in favour for or against the use of Internet videoconferencing approaches[49]. Evidence for its impact on health outcomes suggests it mostly has equivalence with face-to-face communication. This approach seems to be an acceptable mode of care delivery for patients with long-term conditions and there is evidence that patients, who have experienced videoconferencing with clinicians, like it. However, there is limited evidence about healthcare professionals' satisfaction with this mode of communication in this context.

There is enthusiasm from policy makers for approaches that offer an alternative to the traditional face-to-face consultation in accessing health care services across primary and secondary care. However, this enthusiasm needs to be tempered by the knowledge that the majority of the evidence for the effectiveness of these alternatives is of low to moderate quality, being predominantly observational, retrospective, mixed method evaluations, analysis of secondary data, surveys or studies involving qualitative methods to access experiences, attitudes and beliefs of patients and health care staff. Robust independent research evidence about emerging models of virtual consulting is lacking, particularly quantitative evaluations of outcomes and cost-effectiveness data.

1.2.3 Technology for virtual consultations

Telehealth allows the provision of healthcare remotely using various electronic communication tools[50] "Virtual clinic" is a form of telehealth between healthcare professionals and patients that crucially occurs without the need for a traditional face-to-face consultation and thus avoids in-person attendance at hospital. Electronic health records have underpinned the ability to deliver virtual clinics within the NHS[51]. Several commercial platforms now offer seamless video consultation within applications.

Recommended IT solutions by NHS Digital for online consultation are[52]:

Supplier	Solution
ACCURX	ACCURX
Aire Logic, Solution	Forms4health
AllDayDr Group Ltd	AlldayDr Remote Online Consultation
Doctorlink,	Solution 1 - Rapid VC,
	Solution 2 – Doctorlink
EMIS Health	Online and Video Consult
	Video Consult
	Anywhere Consult
Evergreen Life	Evergreen Life
iPLATO	Remote Consultation
Medloop	Patient Optimiser

Supplier	Solution
MyMed Ltd	Q doctor
Push Dr Limited	Online consultation platform
Targett Business Technology Limited	RIVIAM Secure Video Services
Silicon Practice	FootFall
TPP	SystmOne

Online and Video Consult, Video Consult, Anywhere Consult and SystmOne are among the most popular solutions for online consultation, with Attend Anywhere being the most frequently cited in the UK literature. Such platforms are appropriately protected by higher-tier security than web-based platforms (e.g. Zoom® [Zoom, San Jose, CA, USA]) which offer basic advanced encryption software 256-bit encryption. NHS Attend Anywhere® is an available stand-alone audio-video platform which can be set-up from an NHS email address[53]. NHS Attend Anywhere® is also compliant with General Data Protection Regulation (GDPR) and the UK Data Protection Act 2018[51].

Much of the national and international literature reporting evaluations of video consultations pre-pandemic involves use of Skype (Microsoft Corporation, Redmond, WA). A review of the international literature found that Skype is being used widely in telehealth for clinical care[54]. Whilst the review found that Skype was useful and acceptable to clinicians and patients, it found sparse information on the technical adequacy of Skype for telehealth; problems with Internet connectivity and concerns about the security and privacy of Skype.

Virtual clinics using video consultation technology are not the only way that clinicians can communicate remotely with their patients. The Digital Healthcare Council has reported increased use of telephone and text consultations since the start of the pandemic[55].

The company Docly has text-based digital consultation tools and they report a near 40% increase in patient registrations since the beginning of March. Their digital primary care service runs as an asynchronous message-based service in the first instance, with the option to use video, or offer a face-to-face appointment as and when it is needed. Analysis of their activity during the pandemic has shown that the majority of care can be delivered successfully and with greater efficiency by message-based consultations. Only 0.4% of message-based consultations have converted to a video call since lockdown began, and only 4.7% of consultations required a physical follow-up.

askmyGP is an online consultation and workflow system that helps GPs manage patient caseload through operational change and digital triage. Patients can talk to their own doctor and the system aims help GPs to prioritise and deliver care through message, phone and video. Some 53% of askmyGP's patients have requested a response by phone call during the pandemic, followed by online messaging at 37%. Less than 1% requested video calls. In the 12 weeks from 16 March, the provider saw 433,687 patient requests for telephone consultations, 304,471 requests for online messaging and only 5,289 for video.

1.2.4 Impact of COVID-19 on cancer patients

In response to the global COVID-19 pandemic, the UK government introduced a widespread lockdown across the UK on 23 March 2020 to reduce the spread of SARS-CoV-2 infection. In addition to general population lockdown restrictions, some people with specific cancers formed part of the vulnerable "shielded" population[56]. Although the government made it clear that 'the NHS is open'[57] and essential and urgent services must continue, the pandemic and measures taken to mitigate it has had a huge impact on core NHS service. In order to free up enough capacity to deal with the initial peak of the pandemic, the NHS was forced to shut down or significantly reduce many areas of non-COVID care during April, May and June 2020. This, combined with fewer patients seeking care during lockdown due to shielding, transport problems or anxiety about exposure to SARS-CoV-2 virus, means that there has been a significant drop in elective procedures, urgent cancer referrals, first cancer treatments and general outpatient appointments[58]. Research from the British Medical Association (BMA) estimates that in April - June 2020 in England there were[59]:

- Between 1.32 and 1.50 million fewer elective admissions than would usually be expected;
- Between 2.47 million and 2.60 million fewer first outpatient attendances;
- Between 274,000 and 286,000 fewer urgent cancer referrals;
- Between 20,800 and 25,900 fewer patients starting first cancer treatments following a decision to treat;
- Between 12,000 and 15,000 fewer patients starting first cancer treatments following an urgent GP referral.

Data analysis from Cancer Research UK estimated that, by 10 weeks into lockdown, over 2 million people in the UK were waiting for screening, tests and treatments[60]. In their response to the Health and Social Care Select Committee inquiry on 'Delivering Core NHS and Care Services during the Pandemic and Beyond made in April 2020, the organisation estimated that the number of people being sent on an urgent referral for diagnostic tests for suspected cancer had dropped by 75% in England. This was equivalent to around 2,300 cancer diagnoses being missed each week. Radiotherapy had dropped by about 10% of what would normally be expected, although some surgery is being replaced by radiotherapy, and the proportion of patients receiving chemotherapy had reduced by around 30%[61].

Additionally, a BMA survey of 5,905 doctors in England and Wales revealed that over 40% said that they had treated patients in the last week with conditions at a later stage (e.g. cancer, heart disease) than they would normally expect. By mid-April 2020, routine general practitioner (GP) referrals had dropped by 90% and two-week referrals for people with suspected cancer by 67%, raising concerns about unmet need, the pandemic's toll on patients with ongoing health conditions, and the potential for negative effects on cancer outcomes including avoidable cancer deaths[3] [62] [63]. It is suggested that when normal service resumes at a population and health-service level, there will be a huge backlog of patients with potential cancer symptoms needing urgent assessment and that planning for recovery should commence as soon as possible[62] [64].

There is additional evidence from the patients' perspective that indicates that the COVID-19 pandemic has had a significant impact on many cancer patients' testing and treatment, and most notably their care[4]. This has resulted in a negative impact on the emotional wellbeing of many cancer patients. This includes whether they were hoping to finish their treatment, find out the results of their test, have their regular screening, or continue with care that could support them, in some cases for the remainder of their life[65]. People with cancer are already uncertain about their

future. This is now further exacerbated by uncertainty over the risk of contracting the infection and not being able to receive the recommended cancer treatment[66][67].

Figure 2 provides an overall summary of the impact of the pandemic on cancer patients

Figure 2: Impact of COVID-19 on cancer patients[68]

1. Patients with cancer may be more vulnerable to worse outcomes if infected with SARS-CoV-2, including higher risk of developing more serious complications, such as more frequent pneumonias, a higher rate of hospitalisation, respiratory failure with a greater need for ventilator support or multiple organ failure and even death[69][70][71][72] (NB Data remains limited)

2. Potential for delayed diagnosis[68][61]
- National screening programmes (breast, bowel and cervical cancer): Screening has been delayed to protect people from COVID-19, and allow the NHS staff who run screening programmes to support critical services. Some screening programmes are beginning to restart, but there are now many people waiting for screening appointments
- Patients, wary of exposing themselves to the risk of infection, have been more reluctant to present to healthcare services[4]
- Modelling studies have suggested that substantial increases in the number of avoidable cancer deaths in England are to be expected as a result of diagnostic delays due to the COVID-19 pandemic in the UK[73][74][75]

3. Modification of treatment pathways to minimise potential exposure of patients with cancer to SARS-CoV-2 and to reduce the risk during surgery or radiation therapy. Systemic treatments are withheld due to worries of treatment-induced complications. Curative surgeries could face delays, due to shortage in manpower, medical supplies, and high-dependency care capacities[76]

4. Some aspects of ongoing acute care have been deprioritised to enable health systems to respond to the COVID-19 pandemic, which risks patients receiving suboptimal or delayed care[76]

5. Those patients who have completed their acute cancer treatment have often not explicitly been included in reorganised services. Cancer survivors, normally managed by follow-up within acute cancer services, may be "lost in transition"[77][78]

6. Many clinical trials have been suspended, which has reduced current therapy options for patients who might have participated and has jeopardized longer-term therapy development[79]

2. Evidence review methodology

This evidence review aims to provide a comprehensive overview of the research topic.

A "rapid evidence review" methodology was used to carry out the evidence review. Rapid evidence reviews aim to revise and speed up the processes and methods used in systematic reviews without compromising the trustworthiness of the final product. They utilise a structured and rigorous search, as well as employing a quality assessment of the identified evidence. However, rapid evidence reviews are not as extensive and exhaustive as a systematic review[80]. Recognised frameworks developed by the Critical Appraisal Skills Programme (CASP) were used to conduct the critical appraisal of a study design and methodology, population characteristics, intervention, outcome measure/type, review of results and quality of evidence.

The following evidence was sought in order of preference:
- Health Technology Assessments or other good quality evidence underpinning relevant national guidance (e.g. National Institute for Health and Care Excellence (NICE), Royal College publications);
- Good quality meta-analysis/ systematic review. Randomised controlled trials (RCTs) published in the period since the literature search was undertaken for the meta-analysis/ systematic review were also included to provide the most up-to-date evidence. Reviews and synthesis of qualitative research as appropriate;
- If no meta-analyses or systematic reviews were available (or were of low quality); randomised controlled trials were included;
- Only when no randomised trials were available, other controlled trials were sought and considered;
- In the absence of controlled studies; prospective and retrospective observational studies were identified;
- Case series or case studies relating to individual patients were not considered;
- Evidence presented as conference abstracts were not considered.

Grey literature, such as research studies undertaken by charities and research institutes, reports, commentaries and review papers from government, policy bodies and professional organisations, was reviewed in support of the academic literature.

2.1 Search strategy

2.1.1 Search terms
Depending on the limits of the interface with sources, a Boolean search strategy was applied using the operators AND, OR, NOT in combination with the following keywords, index headings and free text. Truncation techniques using asterisks and wildcard techniques using question marks were employed when free text searching:
e-consultation, ehealth, teleoncology, telecare, telemedicine, telehealth, teleconsultation, teleconsulting, telerehabilitation, telepalliative, digital, "virtual clinic", "virtual consultation", "virtual visit", "virtual management", "virtual health", "video consultation", "video visit", "video consulting" "video conference", "videoconferencing", remote, telephone, email, text
Cancer, oncology, palliative
COVID-19, coronavirus, SARS-CoV-2

"Bad news" "courageous conversations" "unwelcome news"

2.1.2   Data sources

Data sources searched included:

- NICE Evidence library portal
- Systematic reviews via: Cochrane Library
- Electronic bibliographic databases: Embase; Medline; PsycINFO, MedRxiv; LitCOVID; The Lancet COVID-19 Resource Centre; Cochrane COVID-19 Study Register
- Websites: NICE; NHS England; King's Fund; Nuffield Trust; Health Foundation; NHS Digital; Cancer Alliances; Royal College of Physicians; Royal College of Nursing; United Kingdom Oncology Nursing Society; Royal College of Radiologists; British Medical Association
- Search engines: Google Scholar and Google
- Targeted searches of The Lancet, The BMJ, The Lancet Oncology, The Lancet Digital Health, Journal of Telemedicine and Telecare, Digital Health, npj Digital Medicine, Journal of Medical Internet Research
- Professional contact: Ceinwen Giles Director, Shine Cancer Support

Additionally, reference lists of key relevant primary research, systematic reviews and meta-analyses and grey literature were examined to identify further studies. Citation searches of key relevant articles were undertaken. Targeted searches for publications by key academic researchers were made.

Searches relevant to virtual solutions to face-to-face consultations for cancer patients pre-pandemic were limited to 2015 – 2020 as this is a well-researched area and, as technology evolves rapidly, there are concerns that studies evaluating earlier technologies may not be relevant. Searches were limited to English language.

Given the inherent differences in healthcare systems, evidence from the UK and the NHS was sought preferentially. This was supplemented with international evidence.

3.   Findings

3.1   Evaluation of virtual approaches to cancer care delivered by cancer clinicians in a pre-pandemic era

Digital health has the potential to enhance the delivery of cancer care through improved patient–provider communication, enhanced symptom and toxicity assessment and management, and optimised patient engagement across the cancer care pathway[81]. Communication between patients and their clinicians plays a critical role in diagnosis, treatment, and prognosis of cancer, with evidence showing that effective communication among cancer patients, survivors, caregivers, and health care professionals facilitates shared decision-making and fosters patient-centred health outcomes[82].

There are specific challenges to the use of digital interventions to facilitate communication between patients and clinicians in cancer treatment and survivorship. This is because cancer care often involves a team of clinicians and other health professionals, which makes it challenging to engage different stakeholders in varied dimensions of cancer care. It also necessitates complex yet interconnected communications for optimal clinical decision making[83]. Another challenge is that of the need for difficult conversations in life-threatening health conditions, which means that any digital solution needs to facilitate sensitive and empathetic interactions. This will be covered in section 3.5. As well as managing cancer patients on the treatment pathway, telehealth solutions are used for treatment side-effect monitoring and toxicity management, and for the delivery of psycho-educational or psychosocial interventions.

3.1.1   Management of new referrals

A study that reported its findings just prior to lockdown assessed the impact of a video consultation clinic for new colorectal referrals in NHS Highland[84]. This prospective observational study included all new patients referred March 2019 to February 2020. Outpatient reviews performed on a face-to-face basis were included as a comparator group. The video consultation clinic appointment could be either at home with instructions on how to use personal audio and camera devices via an Internet connection or at the nearest medical facility offering the NHS Near Me service. During the study period, 50 patients were seen in the video consultation clinic, 40 used home devices and 10 used equipment in their local medical facility. Three patients had difficulties with the technology and converted to telephone review. Patients over 65 years of age accounted for more than 50% of the uptake for this service. The video consultation appointments have been well received, although patient and clinician satisfaction scores were beyond the scope of the reported analysis. Failure to attend video consultation appointments was less than for face-to-face appointments (4% vs 6.1%). Video consultation saved patients' costs.

3.1.2   Management of cancer symptoms by telephone

People with cancer can experience a variety of symptoms, which include pain and fatigue, as well as mental health symptoms of depression and anxiety. Psycho-educational interventions have evolved to provide support for the management of a range of physical and mental cancer symptoms.

Use of telephone as an alternative to face-to-face consultations in hospital has been explored in a Cochrane systematic review[85] which included RCTs and quasi-RCTs that compared one or more telephone interventions with one another, or with other types of interventions (e.g. a face-to-face

intervention) and/or usual care. The review included 32 studies; most were assessed as having a moderate risk of bias, often related to blinding. These studies included a total of 6250 patients with a variety of cancer types and across the cancer pathway, although many participants had breast cancer or early-stage cancer and/or were starting treatment and therefore the findings may not be applicable to other patients. Oncology, research or psychiatric nurses (on average three to four calls per intervention) primarily delivered interventions. Ten interventions were delivered solely by telephone, the rest combined telephone with additional elements (i.e. face-to-face consultations and digital/online/printed resources). The narrative review found that telephone interventions have the potential to reduce symptoms of depression, feelings of anxiety, fatigue and emotional distress. Evidence of the usefulness of telephone interventions for other symptoms, such as uncertainty, pain, sexually-related symptoms, dyspnoea, and general symptom experience, was limited mainly due to few studies exploring these outcomes.

A randomised equivalence trial (n=118) undertaken at the Royal Marsden hospital assessed a high-intensity, high-level intervention in a clinician-referred sample of patients currently being treated for cancer at the same hospital where the psychological care service is situated[86]. The study compared Telephone-Delivered Cognitive Behavioural Therapy (T-CBT) with CBT face-to-face treatment as usual (TAU-CBT), in cancer patients identified by clinicians as having high psychological needs (in terms of mental health and coping). The study found both methods to be equally effective in reducing mental health outcomes assessed by HADS anxiety and depression, cancer concerns, and cancer coping (CCQ) stress and worry. Although equivalence was not observed, due to participant under recruitment (the majority wanted therapy but declined the trial) the data demonstrate that T-CBT was non-inferior to TAU-CBT.

An RCT involving 178 patients with breast, lung, prostate, or colorectal cancer who reported persistent pain, randomised participants to receive either pain coping skills training via mobile phone or to receive traditional face-to-face pain coping skills training for 4 weeks[87]. At 3 months follow-up, the mHealth pain intervention had better feasibility (i.e., attrition, adherence, and time to completion) than face-to-face pain coping skills training. Both groups reported similar patient burden and engagement as well as a high degree of acceptability.

3.1.3   Cancer patients undergoing systemic treatment: Follow-up and monitoring of patients
Patients with cancer, especially those with metastatic disease can undergo systemic cancer therapy for many months. The monitoring and treatment of adverse events and infections necessitates frequent clinical consultations, sometimes involving travel over considerable distances.

A systematic review that examined the effectiveness of Internet-based interventions on cancer chemotherapy-related physical symptoms (severity and/or distress) and health-related quality of life (HRQOL) outcomes found few rigorous prospectively designed studies of Internet-based interventions that target management of cancer chemotherapy-related symptom and treatment toxicities. Five studies that were focused on the remote monitoring of chemotherapy-related toxicity were included[88]. The main design features of the Internet platforms identified, included patient-reported outcome (PRO) reporting of symptoms, telephone counselling by clinicians in response to the PRO data, and e-messaging or interactive communication between patients and clinicians. In two of these studies, patients received tailored self-care advice and could monitor their symptoms via a graph of symptoms over time. Overall, while effectiveness was shown for some of the studies included in this review, heterogeneity in intervention design, features of the

Internet platform, and in the outcomes measured makes it difficult to draw a firm conclusion regarding the effectiveness of the interventions for improving chemotherapy symptom management.

The feasibility and socio-psychological impacts of video consultations made via a mobile smartphone application rather than by computer have been tested in a recent randomised controlled open label trial in a single centre in Germany (n=66)[89]. Patients with solid tumours undergoing systemic cancer therapy were randomised to receive either a standard face-to-face follow-up appointment at outpatient clinics or a video call. Success rate of the first follow-up visit in the intention-to-treat cohort was 87.8% for in-person visits and 78.7% for video calls. Failures were due to software incompatibility (12%) in the video call and DNA (6%) in the face-to-face appointment arm. The success rate for further video visits was 91.6% (11 of 12 calls). Total time spent by patients was significantly decreased and less direct costs for patients were reported. Mean doctor-patient relationship quality scores were higher in the video call arm.

The systematic collection of symptom information using patient-reported outcome (PRO) standardized questionnaires has been suggested as an approach to improve symptom control. Several online, web-based systems exist and have been shown to prompt clinicians to intensify symptom management, to improve symptom control, and to enhance patient-clinician communication, patient satisfaction, and well-being[90 91]. Most patients are willing and able to self-report via the web, even close to the end of life[92].

3.1.4   People living with cancer/cancer survivors: Follow-up of patients
In 2015 it was estimated that there were 2.5 million cancer survivors in the United Kingdom and it was predicted to increase to 4 million by 2030, in line with the increase in both cancer incidence and net survival rates identified for many cancer types worldwide between 1995 and 2009[93]. Busy hospital clinics and ever-increasing numbers of cancer survivors indicate that traditional ways of managing these patients may need to change[94]. Some patients face long and time-consuming travel to the hospital to attend follow-up consultations. There are also increasing financial pressures within the NHS to devise more efficient care pathways. Alternative approaches to physical attendance utilising telehealth methods could help to address this. There is evidence that cancer survivors feel unprepared for the post-treatment period. Advantages of telehealth for this group as revealed by a needs assessment undertaken in cancer survivors may be insight into the course of symptoms by monitoring, availability of information among follow-up appointments, receiving personalised advice and tailored supportive care[95].

Video consultations
Use of video consultations for colorectal cancer patients who had a stoma post-operatively has been evaluated in a small RCT in a Norwegian healthcare setting[96]. Patients (n=110) were randomised to follow-up at single hospital outpatient clinic or by video consultation. Nurses specialised in wound and stoma care performed follow-up consultations in both trial arms, aided remotely by hospital nurses and surgeons. Follow-up was a minimum of 12 months post-surgery. There were no differences between groups in quality of life as measured by EQ-5D™; work and social function; sexuality and body image or in stoma function. Hospital follow-up performed better for organisation of care (staff collaboration, met same persons) and communication. However, video consulting decreased the readmission rate and burden of travel for patients.

Telephone consultations

A systematic review of 48 research studies reported on adult patients' perceptions of the acceptability of, and satisfaction with, telephone-based interventions during or post-treatment for cancer[97]. Three intervention categories were identified post hoc: (1) nurse-led telephone follow-up in lieu of routine hospital follow-up, (2) telephone interventions for treatment side-effect monitoring and toxicity management supplementary to usual care, and (3) supplementary psycho-educational telephone interventions. Across studies, some consistent findings emerged. Positive perceptions emphasised the convenience of telephone interventions and increased accessibility to care. With regard to telephone follow-up in lieu of face-to-face hospital follow-up, high-quality evidence suggested that it was important to have access to health care professionals, in order to deal with concerns in a timely manner. The "normality" of talking by telephone made this easier and a structured intervention helped to organise thoughts and revisit topics. However, some participants missed contact with other patients and the reassurance of a physical examination, describing consultations as rushed and impersonal.

The effectiveness of nurse-led telephone consultations for UK patients with stage–I endometrial cancer has been investigated in a multicentre, randomised, non-inferiority trial involving patients (n=259) attending hospital outpatient clinics for routine follow-up in 5 centres in the North West of England[98]. Participants were randomly allocated to receive traditional face-to-face hospital-based follow-up or nurse-led telephone follow-up. The study reported impact on psychological morbidity and patient satisfaction with the information provided. Study follow-up depended on whether patients were on a 3–monthly, 6–monthly, or annual follow-up schedule. Telephone follow-up was found to be not inferior to face-to-face appointments, and it appears that nurse-led telephone follow-up can replace, or complement, doctor-led face-to-face consultations without increasing patient anxiety or reducing overall satisfaction with the information and service provided. Furthermore, there was evidence that participants preferred the telephone follow-up process as telephone appointments were more likely to be on time, and patients felt more able to express themselves and ask more questions. There was no evidence to suggest that a diagnosis of recurrence was delayed by telephone follow-up. The study had appropriate randomisation techniques, but it was unclear whether ITT analysis was undertaken, given there was a 10% loss to follow-up in both groups. It was adequately powered to detect differences between groups. However, lack of blinding could have introduced bias.

This RCT was complemented by a qualitative study which used semi-structured interviews with 25 of the participants and 7 clinical nurse specialists (CNS)[99]. Patients were randomly selected from participants in the TFU arm stratified by study site. Both patients and CNS regarded telephone follow-up positively. Patients found that telephone follow-up with CNS was convenient and enabled discussion of issues and information provision at time-points relevant to them, increasing their confidence and providing reassurance. The CNS's found the structured format of the intervention enabled them to utilise their skills and knowledge to identify and meet patients' holistic needs. This study confirms the findings of another qualitative study of the same type of intervention, this time undertaken amongst patients who had been treated for colorectal cancer[100]. Qualitative interviews were conducted with 26 colorectal cancer patients who had received telephone follow-up rather than a face-to-face appointment to monitor for disease progression. All patients found telephone follow-up to be a positive experience and all stated a preference for continuing with the intervention. Telephone follow-up was perceived as highly convenient and had distinct advantages

over hospital follow-up in terms of accessibility, personalised care and building a relationship with the CNS.

This study also involved a cost-consequence analysis which enabled a comparison of costs incurred to the health system and to individuals in both arms of the trial[101]. The economic analysis time horizon was up to 12 months following completion of randomisation (January 2014) and took a health system (i.e. NHS) perspective. No difference was found between the arms in terms total mean per patient costs to the health service at 6 months (mean difference £8, 95% CI: −£147 to £141) or 12 months (mean difference −£77, 95% CI −£334 to £154). Each hospital visit cost the patient an estimated £11.47 and productivity costs (time taken off work) were approximately twice as high for hospital follow-up. The results suggest there may be an economic case for telephone follow-up in this patient group, which can free up clinic time for other patients.

In order to ensure the optimal introduction of a telephone system designed to support and manage the symptoms of patients with a haematological cancer at a cancer centre in the UK, a qualitative study involving 20 patients was undertaken. The aim was to better understand the needs of haematology patients during the cancer trajectory and to access patients' views about such a service, including its acceptability[102]. These patients had all experience of this service, which had subsequently ceased to be delivered due to staffing issues. Interview analysis revealed three core themes:
- Fluctuations in emotional distress and coping across the cancer trajectory with evidence of adaptive and maladaptive coping;
- Potential deficits in patient support, continuity of care and information provision;
- Acceptability was influenced by participants' subjective illness contexts and unmet needs.

Whilst patients appeared satisfied with components of support received, it was evident that unmet needs still existed. Choice of patient participation and the need for a refined approach in terms of a personalised, tailored model of care are evident. This suggests a complex intervention, being more patient-centred is a necessary component for success.

The impact of a nurse led telephone supportive care programme on the Quality of Life (QoL) of patients following oesophageal resection for cancer has been assessed in a RCT (n=82) in Sweden[103]. Whilst nurse led proactive telephone based supportive care was found to enhance patients' satisfaction with information without enhancing the number of health care contacts, telephone based supportive care showed no effect on QoL. This study had some methodological limitations.

Several studies report favourable outcomes of telephone-based consultations in terms of acceptability, satisfaction and quality of life, yet, there is also evidence from an Israeli study of breast cancer patients that telephone-based consultations may increase health care utilisation[104]. A significant increase in outpatient care and medications usage following a first consultation was noted. Moreover, a more intense use of this service was associated with elevated health care utilisation. Authors suggest that this result may stem from the proactive nature of telehealth. Whilst transferability to a UK setting is uncertain, this does raise questions about resource use and impact on NHS health care utilisation needs to be explored.

3.1.5 People living with cancer: Psycho-social/psych-educational interventions

Telephone consultations

A meta-analysis published in 2017 of international studies investigating nurse-led telephone interventions for cancer patients, reported reductions in symptoms and emotional distress, improved self-care and quality of life[105]. The review comprised 13 RCTs and 3 non-RCTs involving a total of 2,912 patients with cancer. Of note is that the included studies were published several years ago, and were of low methodological quality.

The impact of psychosocial telephone interventions on psychosocial distress for patients living with cancer across the survivorship continuum has been explored in a systematic review which included 20 RCTs comparing psychosocial telephone interventions as an alternative to face-to-face interventions[106]. Most participants were patients with breast cancer (n = 13 studies). Interventions varied greatly in length and intensity. Eight studies reported significant improvement post-intervention on at least one psychosocial outcome measure. No clear commonalities were found among studies reporting significant effects.

A meta-analysis of 14 RCTs designed to evaluate the effect of a range of telephone-based interventions, during and after treatment, on prognostic outcomes in breast cancer survivors, found statistically significant, but moderate sized, effects for telephone-based interventions[107]. Outcomes included depression, anxiety, fatigue, self-efficiency, physiological function, social-domestic function and HRQoL). No significant effects were observed for depression, fatigue or physiological function. Heterogeneity existed in the pooling of almost all outcome measures.

Video consultations

The effectiveness of videoconference group psychotherapy for cancer survivors has been compared to group face-to-face delivery in a pragmatic RCT (n=269), which was conducted in Spain to examine the effects of both interventions on emotional distress and post-traumatic stress symptoms[108]. The specific population considered was women with a range of cancer diagnoses experiencing emotional distress at the end of their primary oncological treatment. The observed treatment effect was significant in both delivery approaches. Emotional distress and symptoms of post-traumatic stress decreased significantly over time. Treatment gains were sustained across outcomes over follow-up immediately after treatment, and 3 months after treatment.

Virtual (online and videoconferencing) psychosocial interventions for post treatment cancer survivors has also been demonstrated to be effective in a recent review of 23 studies, all published January 2018 to June 2019[109]. Websites were the most common platforms for intervention delivery (9/23) and CBT was the most frequently used therapeutic approach (11/23). Three interventions based on this framework and delivered via websites or combined website-telehealth platforms showed to be effective in improving psychosocial issues (fear of cancer recurrence, insomnia, sleep quality, and prospective memory failures) in post-treatment cancer survivors.

Online interventions

Evidence for the benefits of Internet-based psycho-educational interventions among cancer patients has been explored in a recent good quality systematic review of international literature[110]. This review, which was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) statement, and using the order prescribed by the Cochrane Collaboration for quality appraisal, included 7 studies all with a moderate risk of bias involving a

total of 1220 participants. These studies reported use of 3 intervention tools: website programs (n = 5), email counselling (n = 1), and a single-session psycho-educational intervention (n = 1). Meta-analysis showed that Internet-based psycho-educational interventions significantly reduced depression and fatigue, but there was no evidence for effects on distress and QoL among cancer patients. It must be noted that the interventions investigated comprised Internet-based instruments such as websites, smartphone applications, online games, and online video for conducting psycho-education interventions.

3.1.6   Use of Telehealth for symptom management and delivery of psychological therapy

Some systematic reviews with meta-analysis have conflated studies evaluating multiple approaches (telephone, online, video etc.). Whilst this introduces issues around heterogeneity of studies, the reviews, which tested and accounted for heterogeneity, are considered briefly in this section. Most of these reviews have included studies assessing the impact of socio- or psych-behavioural cancer treatments.

One review of nine studies which assessed the impact of socio-behavioural interventions specifically on QoL of cancer patients currently undergoing treatment found that both telehealth approaches and usual face-to-face delivery methods demonstrated small, but statistically significant improvements in QoL measures[111]. However, there were no statistically significant differences in effectiveness between the telehealth interventions and usual care. A similar review of 11 studies, which was conducted by the same research team, investigated the impact telehealth interventions providing emotional support or self-management of symptoms have on cancer survivors' QoL. It found that telehealth interventions demonstrated large improvements compared with usual care in QoL measures, albeit with substantial heterogeneity[112]. Upon further analysis and outlier removal, telehealth interventions still demonstrated significant improvements in quality of life compared with usual care. Similarly, a further meta-analysis of RCTs with a total of 2190 participants with breast cancer compared usual care and a variety of telehealth interventions[113]. The latter were associated with higher QoL and self-efficacy, with less depression, distress and perceived stress. Anxiety scores did not differ significantly between the two groups.

A systematic review of qualitative research used a thematic analytical method to explore the experiences of adult cancer survivors participating in telehealth interventions[114]. This review defined telehealth as "remote communication or remote monitoring with a health care professional delivered by telephone, Internet, or hand-held or mobile technology" and thus the included studies showed considerable heterogeneity. A total of 22 studies were analysed and three analytical themes emerged, each with three descriptive subthemes:
- Influence of telehealth on the disrupted lives of cancer survivors (convenience, independence, and burden);
- Personalised care across physical distance (time, space, and the human factor);
- Remote reassurance—a safety net of health care professional connection (active connection, passive connection, and slipping through the net).

It was suggested that telehealth interventions represent a convenient approach, which can potentially minimise treatment burden and disruption to cancer survivors' lives. Telehealth interventions can facilitate an experience of personalised care and reassurance for those living with and beyond cancer; however, it is important to consider individual factors when tailoring interventions to ensure engagement promotes benefit rather than burden.

Joining the dots across health and care

A review of the use of telehealth in urology patients identified several studies reporting data on the application of various form of telehealth in prostate cancer[115]. Approaches included video consultations and telephone consultations. In non-metastatic cancer patients, video consultations were shown to be as effective as traditional face-to-face consultations in terms of total time devoted to patient care, total patient face time, patient-staff face time and patient waiting. Similarly, no differences were identified in the patient's trust of the consulting clinician, perception of visit confidentiality, ability to share sensitive/personal information, quality of education provided and overall satisfaction with the encounter. Video consultations were associated with lower costs for patients. Satisfaction following nurse-led telephone consultations versus face-to-face follow-up in a group of prostate cancer patients with low- and intermediate-risk cancer treated with radiation therapy, demonstrated similar satisfaction in both groups. There was also evidence from included studies that for patients treated with androgen deprivation therapies, telehealth approaches can be successfully used to implement specific lifestyle activities and monitor patients' results.

3.1.7   Cancer patients receiving palliative care

The use of telehealth can provide a means of supporting and remotely monitoring patients with advanced illness who wish to remain at home. It may also help reduce the demand on health services. The use of telehealth could empower individuals with advanced cancer, as well as their carers, and improve symptom monitoring and management by facilitating the provision of clear communication between patients and health-care providers. A systematic review exploring the use of telehealth in palliative care exclusively in the UK has shown that it has been used in palliative care settings for many years[116].

A systematic integrative review of the use of video consultations both in general, and in specialised palliative care across various patient groups described the advantages, disadvantages, facilitators, and barriers when using video consultations in palliative care settings[117]. A total of 39 articles were included in the review, consisting of mixed methods (n = 14), qualitative (n = 10), quantitative (n = 10), and case studies (n = 5). The studies mainly focused on specialised palliative care to adult patients with cancer. The review found that the technology can be used for communication between health care professionals and patients and/or relatives as well as for symptom control and clinical assessment of patients. However, this study found that current evidence lacks consensus on if, and when, video consultations can replace face-to-face specialised palliative care consultations.

Despite the lack of consensus on video consultations' exact purpose in palliative care practice, the evidence indicated that most patients, relatives, and professionals were positive toward the use of video consultations. However, studies did mention that for palliative care professionals, the physical distance and lack of physical proximity can be an issue, as professionals saw the physical encounter with patients as essential in relationship-building, and therefore they could not imagine video consultations as a replacement for regular care. In contrast, van Gurp et al. found that the physical distance can be perceived positively by patients[118]. This illustrates the importance of taking the perspectives of both palliative care professionals and patients into account when considering whether video consultations are feasible in a specific practice.

Some studies highlighted how video consultations could contribute to effective and inclusive communication as several participants can participate at the same time. This means that video consultations, for example, can be a beneficial tool in the integration of general and specialised

palliative care, where different health care professionals and/or the patient and relative(s) are often placed at different locations[119]. The review also found that video consultations can facilitate inter-professional and patient–professional discussions and help to inform decisions on future care[120]. On the other hand, there was evidence that patients and relatives can feel overwhelmed by the presence of several health care professionals. Training for professionals on how and when to use the technology for this group of patients is essential.

Findings from this review were confirmed in another review of systematic reviews examining use of telehealth in general in patients receiving palliative care[121]. This review found that telehealth in general appeared to be acceptable to patients, caregivers and health professionals, and indicated that it may be a cost-effective means of learning and information exchange, of providing faster access to health professionals, and of improving efficiency of service delivery. Telephone follow-up is considered a feasible alternative to traditional hospital follow-ups for assessment of symptom palliation in a cancer population.

Similarly, a scoping review of 22 papers (19 quantitative, qualitative and mixed methods studies) explored patients' experiences of any telehealth approach in a palliative home care setting. The review identified four major themes:
- Easy and effortless use of telehealth regardless of the current health condition;
- Visual features that enhance communication and care via telehealth;
- Symptom management and self-management promotion by telehealth;
- Perceptions of improved palliative care at home122.

However, it was noted that there were contradicting results on whether the use of telehealth improved burdensome symptoms and quality of life.

Collaborative approaches to palliative care were explored in a 3-arm RCT involving 516 patients with advanced-stage cancer experiencing mild disability which focused on symptom burden and specifically whether collaborative tele-rehabilitation and pharmacological pain management improve function, lessen pain, and reduce requirements for inpatient care[123]. The study was conducted in a US healthcare setting. Tele-rehabilitation with physical therapy-directed pain management was found to modestly improve function, pain, and quality of life, and reduce hospital length of stay and use of post-acute care facilities. Tele-rehabilitation with nurse-directed pharmacological pain management also improved pain and reduced use of post-acute care facilities.

A service evaluation of a 24/7, nurse-led telephone and video-consultation support service for patients thought to be in the last year of life (Gold Line) has been conducted in Bradford, Airedale, Wharfedale and Craven[124]. Access to the service for patients and carers is either via telephone, or via a video app on an iPad. Whilst the evaluation predominantly focused on descriptive statistics relating to service use, qualitative data from interviews with patients and carers reported experiences of support and reassurance from the Gold Line and the importance of practical advice was emphasised. The line enabled them to feel supported and remain in their place of residence, avoiding hospital admission or use of other services. Symptom burden was not explored.

In terms of managing symptom burden, it has been suggested by one study that video-conferencing may be deleterious. An RCT, conducted in the Netherlands, which aimed to determine whether

weekly teleconsultations from a hospital-based specialist palliative care consultation team could improve patient-experienced symptom burden compared to usual care, found that adding weekly teleconsultations to usual palliative care leads to worse reported symptom scores among home-dwelling patients with advanced cancer[125]. Possible explanations for these findings include excess attention on symptoms and (potential) suffering, that the supply-driven care model for teleconsultations used in this trial, and the already high level of specialist palliative care provided to the control group in this study[126].

To aid in the management of pain for patients with advanced metastatic disease, an electronic pain monitoring system (PainCheck) has been developed and tested amongst UK patients and health professionals. PainCheck is a web-based system developed with patients and health professionals, which allows patients to record their pain and gives them remote access to personalised pain management advice[127]. Evaluative qualitative data suggested that patients and health professionals were generally positive about PainCheck and found it easy to understand. PainCheck was perceived to improve self-management of pain. However, concerns about clinical integration were raised relating to impact on workload, how lack of response may affect patient care and older patients' ability to engage with and use the technology. The role of health professionals was seen to be a key component to patient engagement with the system. Where patients engaged with the system, both patients and health professionals reported benefits to system use in addition to usual care. Introducing and implementing interventions which are dependent on multiple providers indicates that time needs to be invested in working collaboratively throughout[128].

3.1.8   Cancer patients and caregivers

Caregivers are usually family members or close friends whose efforts to care for their relative or friend with cancer carry a considerable physical and psychological burden. Literature reviews and meta-analyses confirm the association between greater mental burden and poorer physical and mental well-being[129]. Responsibilities and stressful experiences associated with the caregiving role can lead to physical and psychological impairments of depression, anxiety, worry, and loneliness, which may then impact on the health care system from an economic or a social perspective.

A systematic review of 24 studies (19 of which were RCTs) has assessed the impact of interventions utilising telephone calls or various telehealth systems aimed at improving the physical and mental well-being of cancer patient-caregiver dyads[130]. Included studies considered the caregiver's condition from both an individual and a relational point of view and studies involved patients with different types of cancer at different stages. Along with psychosocial variables, some studies monitored engagement and user satisfaction regarding the virtual interventions. Overall, the review found that all studies reported significant improvements in variables studied, but these effect sizes were generally small.

The efficacy of telephone-based symptom management (TSM) for symptomatic lung cancer patients and their family caregivers has been assessed in an RCT undertaken in a US setting[131]. Symptomatic lung cancer patients and their caregivers (n = 106 dyads) were randomly assigned to four sessions of TSM consisting of cognitive-behavioural and emotion-focused therapy or education/support usual care. No significant group differences were found for all patient outcomes and caregiver self-efficacy for helping the patient manage symptoms and caregiving burden at follow-up. Small effects in favour of TSM were found regarding caregiver self-efficacy for managing their own emotions and perceived social constraints from the patient. Study outcomes did not

significantly change over time in either group. However, this study was underpowered which may explain failure to detect differences between groups and the follow-up (6 weeks) was short.

3.1.9   Virtual approaches to spiritual health of cancer patients

Respecting spiritual beliefs is part of whole-person care. *The Lancet* has published one of its "series" on faith-based health care that illustrates the importance of this facet of life[132]. Healthcare chaplains are individuals who work or volunteer within healthcare contexts to provide spiritual, religious, and emotional support to patients, caregivers, and staff. Chaplains have reported that their role occurs in a multi-faith context and that they provide spiritual care to patients of all faiths and none, working closely with multidisciplinary clinical teams[133]. The feasibility and acceptability of providing a telephone-based chaplaincy intervention has been explored in a large, outpatient oncology centre in the US[134]. Patients indicating religious or spiritual concerns were offered a telephone-based chaplaincy intervention (n=212). Telephone-based chaplaincy interventions were offered to 100% of eligible patients, establishing contact with 61% of eligible patients, and offering chaplaincy interventions to 48% of those patients over a 6-week period. Survey results indicate that chaplaincy delivered by phone as the first contact is acceptable to patients seen in an outpatient oncology clinic, with surveyed patients reporting positive responses about the chaplain's abilities on the phone, and various aspects of the service offered.

3.1.10 Ongoing studies

Video-based consultation that bring the cancer patient, the GP and the oncologist together in the early phase of treatment may facilitate a sense of partnership. The coordination, continuity and cooperation across primary and secondary care for cancer patients' during cancer treatment is being investigated in a pragmatic RCT conducted in a Danish setting[135]. This trial will test whether bringing the oncologist and GP together with the patient in a single shared video-based consultation in the early months of treatment, in comparison with usual care, will:

- Increase the cancer patients' perception of primary/secondary care cooperation (primary outcome);
- Increase their perceptions of continuity of cancer care, distress and health-related quality of life (secondary outcomes).

Power calculations indicate a sample size of 300 patients is needed. Trial register information indicates an intended study completion date of May 2020.

3.2 Recommendations from policy, guidelines, and professional or expert consensus during the pandemic

3.2.1 Policy context: NHS England and Improvement

The embedding of digital technologies into health care is now a priority in the UK[136]. Such technologies have emerged over recent years as important vehicles to drive evidence into health policy and guide practice, through changes in service delivery systems and clinician behaviour[25]. The NHS Long Term Plan, which was published in January 2019, sets out the ambitions for improvement over the next decade[137]. This plan's aim is to shift the NHS model of care further upstream - for example, more preventive care, closer integration of services in the community for people with chronic conditions, better coordination of urgent care to reduce demand on emergency departments. And much of this shift in care is to rest on technology, for example, on data sharing to coordinate services and target proactive interventions, apps and artificial intelligence to support "digital first" primary care, and telehealth and telecare to support people with frailty[138]. Chapter 5 of The NHS Long Term Plan promises that "*Digitally-enabled care will go mainstream across the NHS*" with the aim of improving service delivery, decreasing demand and increasing financial efficiency.

This vision had been one in which a third of NHS hospital outpatient consultations are undertaken by video link, with GPs and practice staff increasingly connecting with patients remotely. Until now, there has been reluctance on the ground to make this happen and video consultation services across NHS settings in both primary and secondary care have been ad hoc and slow to take off.

NHS England and NHS Improvement have issued several documents relating to the management of NHS services since the start of the pandemic. The information below is a "snapshot" of those available at the time of writing (17th August 2020) and relevant to remote management, particularly of cancer. These documents are subject to change as they are updated regularly in response to a rapidly changing situation. All current documents relating specifically to cancer can be found by following the links here.

Secondary care

Clinical guide for the management of remote consultations and remote working in secondary care during the coronavirus pandemic[139]
This guide was published in March 2020 and outlines practical information about delivering remote consultations and other ways of remote working in secondary care. It covers issues such as workforce implications; when to use a remote consultation; specific use cases; planning guides for the stages of virtual appointments and a patient guide to virtual appointments. However, it does not explicitly refer to cancer patients.

Specialty guides for patient management during the coronavirus pandemic
Clinical guide for the management of non-coronavirus patients requiring acute treatment: Cancer[140]
This guide, issued in March 2020, provides clear prioritisation structures for cancer patients. It calls for outpatient visits and triage to be shifted to phone consultations, incorporating a risk-benefit balance. This reduces the risk of contagion for the health personnel and patients, especially when the potential benefit of an oncological intervention in terms of cancer recurrence/overall survival is so small that it does not counterbalance the potential risk of death from COVID-19.

It explicitly recommends: "Offer consultations via telephone or video consultation wherever possible".

Advice on maintaining cancer treatment during the COVID-19 response[141]
This letter was sent to NHS Trusts in April 2020. It includes information about the adaptation of existing cancer waiting time guidance to recommend telephone triage of referrals.

Specialty guides for patient management during the coronavirus pandemic Clinical guide for triaging patients with lower gastrointestinal symptoms[142]
This guide was added in June 2020 and recommends: "To support appropriate referral from primary care, trusts should consider providing specialist telephone advice and guidance to GPs prior to formal referral and also to allow direct telephone consultations between patients and specialists."
The guide was developed with the support of the British Society of Gastroenterology.

Primary care
Principles of safe video consulting in general practice during COVID-19[143]
This guide, published in May 2020 is aimed at NHS general practice staff who are consulting via video with patients at home, with key principles, which apply to practitioners across wider primary care. It was developed in collaboration with the Royal College of General Practitioners (RCGP)
However, it does not explicitly refer to cancer patients.

Cancer Alliances
Second phase of NHS response to COVID-19 for cancer services[144]
This letter, sent in June 2020, recommended to Cancer Alliances:
Accelerating the adoption of Rapid Diagnostic Centre principles as set out in the specification, including:
- Centralised, virtual triage to prioritise backlogs and allocate patients to appropriate tests;
- Hot reporting and multiple same-day tests/one stop clinics where possible to minimise patient visits to hospital.

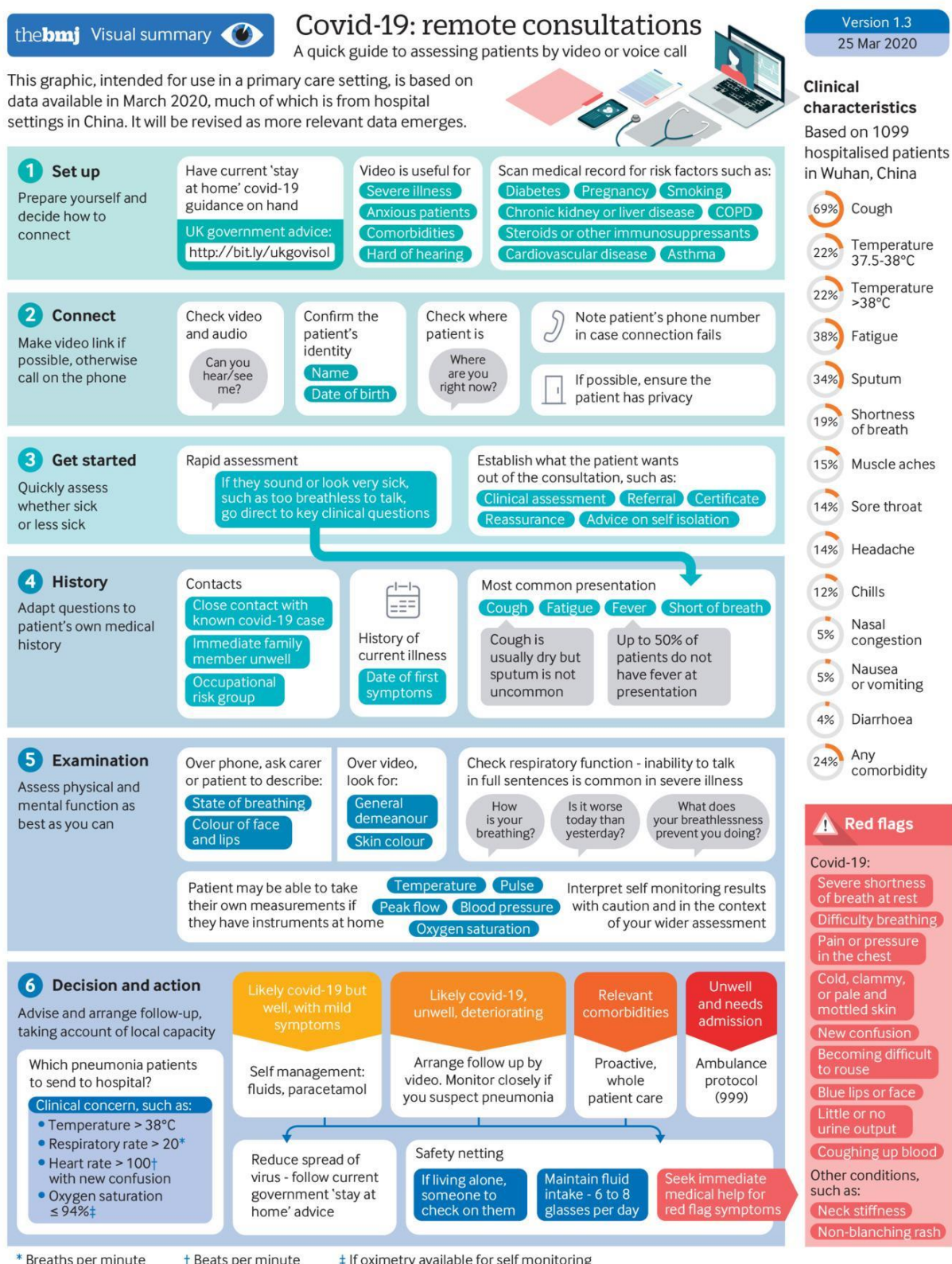### 3.2.2 National Institute for Health and Care Excellence (NICE)
NICE is supporting the NHS and social care with the publication of new rapid guidelines and evidence summaries during the pandemic. It has not issued any guidance specifically about remote consultations.
Guidelines, which are directly relevant to cancer care, are:
- COVID-19 rapid guideline: delivery of radiotherapy[145]
- COVID-19 rapid guideline: delivery of systemic anticancer treatments[146]
- COVID-19 rapid guideline: managing symptoms (including at the end of life) in the community[147]

Whilst this guidance focuses on management of clinical care, the rapid guideline for managing symptoms in the community contains a visual summary originally published in the BMJ: COVID-19: remote consultations Visual summary: A quick guide to assessing patients by video or voice call[148] (Figure 3). Whilst this infographic is predominantly for use in patient consultations with suspected COVID-19, there are elements transferable to consulting remotely with any patient.

Figure 3: Taken from Greenhalgh T COVID-19: a remote assessment in primary care

Figure 3: Taken from Greenhalgh T COVID-19: a remote assessment in primary care

3.2.3   Professional organisations and oncology societies

The pandemic poses several challenges for oncology services. Physical distancing[149] and restricting travel[150] have been identified as primary contributors to limiting the spread of SARS-CoV-2. Caregivers must think about how to minimise unnecessary travel and their patients' exposure to health-care facilities. Consequently, an array of guidelines, statements, and comments have been published by numerous professional organisations, individual institutions, and oncology societies world-wide on the management of cancer during the COVID-19 pandemic. These consider all aspects of cancer care along the pathway, as well as practitioner and organisational issues[151] [152] [153]. Some are focused generally whilst others consider specific disease-sites, parts of the cancer pathway e.g. palliative care, or particular sub-sets of patients e.g. the elderly. Guidance documents vary in length, style and content. Some groups have developed international expert consensus recommendations, which have been established using consensus techniques such as a modified online Delphi process with representation from the relevant multidisciplinary bodies worldwide; others combine such techniques with reviews of the literature. These tend to be complemented by fully referenced, academic papers describing their development[154] [155] [156] [157] [158]. By contrast, some are short, pragmatic summaries with expert advice for clinicians[159] [160] [161] [162] [163] [164] [165] [166] [167] [168] [169] [170] [171] [172] [173] [174] [175].

Whilst guidance has focused predominantly on the physical re-organisation of secondary care services, there has been overwhelming endorsement for the use of telehealth within guidance. For example, the European Society for Medical Oncology (ESMO) recommends that patients undertaking oral treatments should be transferred to telephone consultation and web-technology contacts for a prescription renewal. ESMO also endorses the use of telephone and web-technology for toxicity evaluation, dose adaptation, and supportive care recommendation[176]. The tiered approach of ESMO advises that low and medium priority cancer patients be referred to telehealth services as much as possible.

A list of UK-relevant organisations with links to their guidance can be found in Appendix 1.

Examples of recommendations involving remote consultations from guidance (NB This is illustrative only and not intended to be exhaustive)

- Monitor follow-up through video or phone consultations, with face-to-face review only in the case of suspicious findings[164];
- It is appropriate to combine routine face-to-face and video or phone consultations[164];
- Outpatient visits: During the pandemic, the majority of encounters should be conducted remotely via telemedicine[165];
- Patient psychological well-being needs to be considered and often can be addressed with telemedicine/phone visits[165];
- Evaluate the possibility to perform a telemedicine consultation (teleconference system or only medical reports including photographic documentation) if there are no side effects or persistence/relapse of disease[166];
- All visits should be transitioned to telehealth visits. Although video visits are preferred, these telehealth visits can include simple phone calls if video visits are not possible given the limitations of technological infrastructure. On-treatment visits can also be performed using telehealth technology to further reduce exposure risk[167]
- Postponing all routine follow-up/surveillance visits, or transition to telemedicine/web-based consultation, if resources allow, until crisis has stabilised and it is considered safe to return to

normal operating procedures. Patients to notify healthcare team of any new or concerning issues by telephone or electronic correspondence[177];

- For radiation therapy patients that are visiting on a daily basis, consider changing face-to-face weekly visits to telemedicine, unless examination is required[39];
- Consider oral therapy treatment options, when possible, to minimise the need for infusion visits; continue to conduct toxicity checks via tele-visits or home visit (if possible) to reduce in-person office visits[169];
- Close monitoring through phone calls, telecommunication to ensure social distancing and psychological support from patient family to prevent anxiety and depression[170];
- Home health care telemedicine may be an effective strategy for older cancer patients with COVID-19 infection to avoid hospital admission when health care resources become restricted[170];
- Premalignant disease: Defer with telemedicine visits. Review clinical photographs to help rule out invasive cancer missed by biopsy[171];
- Early malignant disease: Consider short-term deferral with weekly telemedicine visits[171];
- Staff taking care of patients with serious COVID-19 should receive training in online clinician–family communication (while using telephone or video conferencing)[173];
- Where appropriate, hospitals and dermatology teams should continue to aim to deliver virtual clinics for outpatient appointments for the duration of the COVID-19 outbreak to support infection control. Virtual clinics provide a direct contact to a named surgeon by video link, email or telephone[161];
- Telephone reviews for all follow-up outpatients who do not need urgent and active treatment should be the first approach. Face-to-face post-operative review should only be carried out if this is required based on clinical need, and it should only be carried out once unless clinically indicated[161].

Key principles:[162]

1. Streamline skin cancer patients on 2WW pathways, using tele-dermatology to triage referrals and book patients directly to surgery where possible

2. Manage urgent/ on-call patients and inpatient referrals using secure nhs.net email or mobile messaging apps where possible

3. Redirect new patients through Advice and Guidance services where possible rather than referral

4. Manage referred patients by switching face-to-face clinics to teleconsultation +/- video consultation where possible (new and follow-up)

5. Optimise remote access to allow dermatology staff to continue to provide patient care from home if required

6. Facilitate virtual staff team meetings to coordinate patient care

7. Establish patient consent policies for receiving reviewing and storing patient images from health care professionals and patients.

Analysis of this guidance shows that the majority, across all disease-sites, suggest utilising virtual solutions at various parts of the patient pathway, predominantly telephone and telehealth consultations. Little of the guidance based its recommendations for remote patient contact on research evidence, but on evidence from expert consensus or opinion alone. There were occasional exceptions to this.

3.2.4   Expert body guidance
The Health Foundation
The Health Foundation has an evidence-based resources page relating to setting up and running successful video consultations[178]. This comprises a webinar hosted by Prof Trish Greenhalgh; implementation guidance; information governance; and guidance for patients and case examples.

3.2.5   Expert opinion
There are innumerable numbers of papers in the academic literature from cancer experts offering recommendations and advice for cancer care during the pandemic based on their professional opinion[179]. The volume of these publications makes a comprehensive analysis outside the scope of this rapid evidence review, and therefore only those offering recommendations for issues less well covered by the professional organisations' guidance will be outlined.

Guidance based on expert opinion has provided recommendations for both clinicians and patients in the use of telehealth in order to perform a virtual examination for patients with head and neck cancer[180]. This guidance includes practical advice about what is necessary in order to carry out a virtual consultation successfully, something which is lacking in most guidance from professional bodies. It also includes a handout to be distributed to patients prior to the consultation, in order that patients can familiarise themselves with general expectations and key examination steps that they may be asked to perform during the consultation. Practical guidance suitable for non-site specific video consultations is summarised in Figure 4 and the patient handout is reproduced as Figure 5.

Figure 4: General guidelines for clinicians and patients for conducting a video consultation

Patient	Clinician
If possible have a family member or friend present during the consultation	Maintain professionalism throughout
Use desktop or laptop computer with high resolution camera positioned at eye-level rather than smartphone	Use a high-resolution camera
Choose a room in the house with ample lighting	Dress professionally
Access to high-quality Wi-Fi or network signal is crucial	Ensure face is clearly seen
Have a flashlight or other light source available in case of a physical examination	Use ample lighting
	Access to high-quality Wi-Fi or network signal is crucial

Figure 5: Taken from Prasad et al: Telemedicine guide for patients
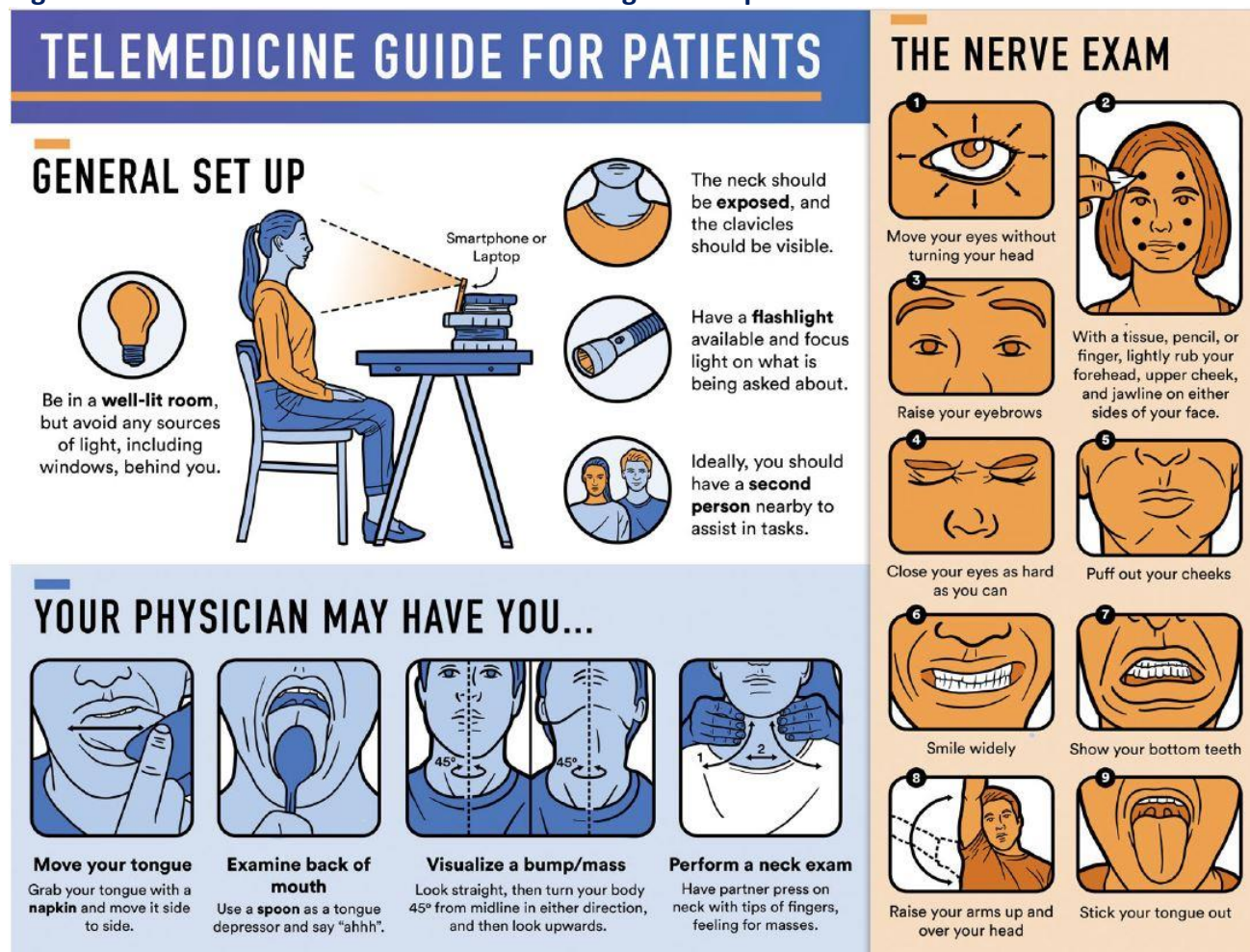
Most guidance focuses on the adjustment of service delivery to try to ensure continuity of care for patients. However, cancer patients are also subject to psychological effects linked to their condition. The challenges for cancer patients in the specific context of COVID-19, add to their pre-existing psychological burden, especially since cancer is a risk factor for COVID-19 mortality. Concurrent threats of a cancer diagnosis and community spread of COVID-19 create significant uncertainty, stress and distress, making it particularly important to address those issues[181]. The psychological impact of not only the cancer but also the increased social distancing and shielding measures many of the patients face requires consideration.

Experts have suggested that good patient–physician communication is vital in this regard and telehealth could offer a solution[182], through utilising telephone and video calls to facilitate patient consultations, and serving to provide cancer patients and their caregivers customised information. This would reduce their anxiety and reduce the feeling of being abandoned by their health care professionals, as well as providing psychological support for individual patients, while limiting visits to cancer centres[66][183]. Evidence from disaster psychiatry has identified five principles for mass trauma intervention to be safety, calming, connectedness, self-efficacy, and hope. COVID-19 is an extreme event for cancer patients and concurrent threats of cancer diagnosis and community spread of COVID-19 create significant stress and distress. The five principles provide a useful framework for helping cancer patients cope with stress in the era of COVID-19. This framework has

been adapted for psycho-oncology consultations with cancer patients at a US centre during the initial online encounters with patients after shifting to telehealth delivery of care[184].

Remote shared care delivery, which enables multiple patients to be seen at once via virtual platforms, has been recommended by cancer care clinicians at Imperial College Healthcare NHS Trust and the Royal Marsden Hospital[185]. They argue that those using such a model of care often report improved outcomes and productivity gains through eliminating repetition of common advice.

Advice for clinicians on making remote consultations work, written by two individuals with first-hand experience living with an immune-deficiency and recently recovered from cancer, recommend some more practical tips[186]:
- Be clear about how long an appointment is likely to take, who it is with, and what will be discussed;
- Take time to acknowledge the pandemic, and how appointments have changed. Ask how patients have been affected by lockdown and isolation;
- Not everyone will be able to access a quiet, well-lit space with a good Internet connection. Consider what the minimum for an effective consultation might be;
- Be clear about next steps for treatment and management, particularly in the current context;
- Discuss potential impacts, if any, on delays to treatment, scans or other clinical appointments.

Finally, whilst not specific to cancer patients, the RGCP has produced advice for primary care on adapting to changing consultation formats, including best practice for online and telephone triage appointments[187]. Similarly, the Royal College of Nursing (RCN) has produced general guidance for nurses undertaking remote consultations under COVID-19 restrictions. This is to support nursing staff, including health visitors, midwives and nursing support workers, where they are being asked to see and/or treat patients via a telephone or video or other remote consultation process[68].

What is lacking in most of this proliferation of guidance is practical advice about how best to conduct remote consultations, either specifically in cancer care, or more generally. There are a number of resources and online training opportunities, some of which were produced pre-pandemic. These are tabulated in Appendix 2.

3.3 Evaluation of virtual approaches to cancer care delivered by cancer clinicians during the pandemic

The pandemic has accelerated the telehealth revolution, much faster than the NHS Long Term Plan anticipated. Remote consultations now dominate primary care and outpatient services. This swift uptake of technology has been critical to continuing healthcare provision during the crisis. Since the onset of the pandemic, delivery of healthcare via virtual approaches has grown at an unprecedented rate with use growing by 1,000% in some countries that have been measuring its use[188] [189]. However, there have been differences in the way that various countries have responded, which relate to their prior experiences with telehealth, the different health, and to some extent, social care, contexts, and cultures; the respective geographies (most notably in relation to rural areas); and the linked funding frameworks[190].

The slow uptake of these technologies in the UK as highlighted in section 1.2.1 has meant that the UK has demonstrated a relatively more cautious uptake of telehealth in response to COVID-19 compared with some other countries and challenges of scaling up this model at speed have been reported[178] [191]. Despite this, there is evidence that NHS services are rapidly adopting digital technology[192]. NHS Digital reported that just 15% of 23 million primary care appointments during December 2019 had taken place by phone or online[193]. By April 2020, 49% of appointments during the month were by phone or online[194]. By May, many GP practices were reporting delivering 90% or more of appointments virtually[192] with GP practices now activating remote consultation platforms[195]. A survey by the RCGP conducted in July 2020, showed that whilst before the pandemic telephone consultations accounted for around a quarter of consultations, during the pandemic these have risen to 70%, with face-to-face appointments reserved for those patients who really needed them. There has also been an increase in video consulting, with almost 90% of GPs reporting that their practices are now video-enabled, even though these account for a small proportion of consultations overall[135].

The transformation has been equally dramatic in some hospital and community services. NHS organisations that were actively developing virtual clinics prior to COVID-19 in line with the NHS Long Term Plan regarding reduction in face-to-face outpatient appointments have reported even faster implementation during the pandemic[196] [197]. Telehealth could be the safest way to deliver care for a large percentage of patients with cancer, who are, by nature of their disease, more at risk of unfavourable outcomes of COVID-19 and often have other risk factors for poor outcomes such as older age and significant comorbidity. The resources needed to implement such interventions could likely be of benefit also after the end of the emergency to provide more convenient health care delivery and, potentially, reduction of health care costs. This section covers reports of remote solutions to accessing services by patients and clinicians utilised specifically in cancer services in the UK and elsewhere since the start of the pandemic.

There has been a significant number of articles published since the start of the pandemic relevant to use of telehealth in cancer care (often in the form of letters or clinical correspondence for rapid publication, therefore not subject to peer review). Some of this literature offers only narrative descriptions of changes to services, or describes the development of protocols which included virtual consultations, but which were non-evaluative. Only evaluative literature or literature presenting descriptive statistics of the use of telehealth solutions are summarised. Descriptive publications are listed in Table 1.

Table 1: Studies describing changes to services

Specialty/cancer	Comment	Country
Acute myeloid leukaemia	Telehealth, virtual visits, delayed transfusions, and chemotherapy, preferably selecting self-administered medications and visits by home healthcare workers have been implemented	US[198]
Laryngology	MDT consensus identified areas of consideration when offering telehealth (1) how to set up and structure a telehealth visit and maintain patient confidentiality, (2) patient examination and treatment initiation, (3) optimisation of the tele-visit, (4) limitations and recognition of when a tele-visit is insufficient for patient care needs	US[199]
Colorectal	Pathway for colorectal surgery was established which included telephone calls to patients to make the arrangements	UK[200]
Urology	Uro-oncology outpatient clinic developed a strategy to ensure the patient's safety by efforts focused on strict quarantine observation, reduction of clinic visits and implementation of virtual patient management into the workflow	Germany[201]
Haematology and Oncology Centre	Oncology team switched from face-to-face outpatient clinic appointments in March to an almost entirely telephone-based outpatient service. New patients are now being seen face-to-face and video consultations have been set up as an option	UK[202]
Radiation and medical oncologists for HNC	Telehealth and virtual MDT conferences to continue to offer standard-of-care HNC treatments during the pandemic. Early experience at a high-volume cancer centre reported but minimal evaluative content	US[203]
Tertiary hepato-pancreato-biliary centre	A telephone-based surveillance protocol was developed, and managed by a surgeon or an oncologist. The content of each call is structured using a standardised checklist covering: General health; bowel function; QoL; check of blood tests results; check of abdominal imaging reports	Italy[204]
The Oxford Bone Tumour and Soft Tissue Sarcoma service	The Oxford Sarcoma Service was re-structured based on the guidelines issued by the NHS and the British Orthopaedic Oncology Society (BOOS). Telephone or video consultations were initiated, especially for follow-up patients	UK[205]

3.3.1 Diagnosis/Triage

An evidence-based, structured, telephone system has been introduced for patients with head and neck cancer across cancer centres in the UK[206]. The Head and Neck Cancer Risk Calculator (HaNC-RC)-V.2, previously generated from 10 244 referrals (diagnostic metrics: 85% sensitivity, 98.6% negative predictive value and area under the curve of 0.89) was adapted for use for suspected referrals with cancer. All relevant cancer centres were contacted and invited to participate. A customised Excel Data Tool was created. It was trialled across professional groups, and made freely available for download, along with a user guide and protocol. This structured triaging system has been endorsed by ENT UK, the official body representing British Otolaryngologists—Head and Neck

Surgeons and the British Association of Head and Neck Oncologists. The project was developed in collaboration with INTEGRATE, the UK Trainee Research Collaborative Network.

Analysis of first data collected from 511 triaging encounters from 13 centres [192] shows that none of the teleconsultations were refused by patients and very few (<1%) expressed some dissatisfaction at the arrangements. The overwhelming majority understood the reasons for the remote consultation. A total of 77.1% of patients were discharged directly or had their appointments deferred until a later date; the remaining 22.9% were triaged to urgent investigations and/or face-to-face consultations.

Further preliminary data from the evaluation project [207] has been published on the ENT UK website, with interim data available from 32/46 registered sites across the whole UK comprising 2,164 new and follow-up cases 23rd March - 18th May 2020. The majority of referrals were low risk (70.0%; n=1,069/1,528). Following telephone triage, 17.5% of referrals (1.6% of high risk and 24.4% of low risk) were discharged based on the telephone consultation alone. Less than half of all referrals (45.3%, n=768/1,404) were planned for urgent clinic review and/or investigation; thus, 54.7% of suspected HNC patients avoided an urgent hospital visit during the peak of the pandemic. An investigation was performed as the first urgent contact in 56.7% (n=250/441) with 75.2% (n=188/250) of these either being subsequently discharged or offered delayed follow-up only; thus avoiding an urgent face-to-face review during the worst of the pandemic. Among patients who were recommended urgent review, 6.6% (n=42/636) had been diagnosed with cancer by the time of this interim submission of data.

Remote consultations for triage and management of routine dermatology referrals in response to the COVID-19 pandemic has been utilised and assessed at a UK hospital in the South West [208]. Although this solution covered only those referred by primary care as routine non-urgent cases, suspected cancer cases were identified by remote consultation. Referral letters of 816 non-urgent cases were reviewed by a team of 15 clinicians (consultants, associate specialists, and registrars) working in the department, including those shielding/working from home. Patients were contacted via telephone or video calling (Attend Anywhere). For telephoned patients, each clinician decided if patient photographs would be useful. If so, the patient was directed to send good quality images to a secure NHS email account. Follow-up contact was made with the patient to relay the diagnosis and any further management required (contact method not described). Data were available for 488 patients contacted over a two-week period. Of these, 259 had been referred with a lesion and 4 of these were expedited onto the two-week-wait pathway.

Separate feedback about these cases is not available, but overall feedback from clinicians was positive, as it was felt a large proportion of referrals were pragmatically, safely and effectively managed through remote consulting. It was felt that remote consultations are an effective process to manage a large volume of referrals efficiently to reduce the need for face-to-face clinic appointments. Patients were receptive to remote dermatology consultations. Patient-sourced photographs of lesions were mostly sufficient to allow diagnosis, advice and/or treatment and/or booking of surgery. Limitations encountered include variation in opinions between clinicians, and the process was felt to be time-consuming by clinicians.

In order to streamline the process, it was suggested that administrative staff could triage the referrals and arrange with the patient or referring GP to submit necessary images ahead of the

clinician call. Otherwise, a standardised letter, email or multimedia message could be sent to patients to request they send their own images to an appropriate platform, prior to their remote consultation. However, it was felt that there will be some patients without the knowledge or capabilities to do this, as is the case for video calls.

The COVID-19 pandemic has also challenged diagnostic services. Histopathology presents its own specific challenges within this context, partly because there are aspects of the job that simply cannot be done remotely, for example, the handling of surgical and cytology specimens. A small survey was carried out with 18 pathologists within an NHS cellular pathology department at a UK tertiary referral hospital, who had access to digital pathology. Digital pathology provides an opportunity for pathologists to view digital images of glass slides on a workstation that can be remote from their usual place of work. Results indicated an increase in uptake of diagnostic digital pathology during the pandemic, with increased remote access[209]. Half of respondents agreed that digital pathology had facilitated maintenance of diagnostic practice and 6/18 and 7/18 respectively agreeing that digital pathology had eased workforce crises during this period and reduced potential impact on turnaround times.

There was an overall positive response regarding the implementation of digital pathology, with 14/18 agreeing that digital pathology is a positive step and 16/18 agreeing that they would likely continue reporting digitally beyond this crisis. No respondents stated that they would not report digitally in the future because of their digital pathology experience to date. No data on impact on accuracy were reported. Respondents stressed the importance of absolute clarity in the guidance pertaining to the utility of diagnostic pathology in diagnostic practice, especially with respect to remote working. They indicated the desire for specific local guidance on this issue in addition to the RCPath guidance on remote reporting of digital pathology slides, which was written in direct response to the current pandemic.

3.3.2   Management of cancer patients

Telehealth has been used successfully to replace outpatient consultations at cancer centres in the US. At one centre, the use of video consultations was rapidly scaled up in response to COVID-19 and maintained access to complex oncologic care[210]. A total of 2284 video visits had been performed in the 11 weeks before COVID-19 changes were implemented (mean 208 per week) and use increased to 12,946 video visits in the 11-week post COVID-19 period (mean1177 per week). The proportion of video visits increased from 7-18% to 54-72%, between the pre and post COVID-19 periods without any disparity based on patient demographic characteristics.

Unpublished post-appointment survey data (completed within 2 weeks of the telehealth appointment) from another centre, which had implemented telehealth showed the following results for all patients with cancer irrespective of site:
- 99% of patients were satisfied with their telehealth visit;
- 91% of patients agreed that the telehealth video system utilised was easy to use;
- 94% said they would use telehealth consultations again;
- 87% felt it provided the same care as a face-to-face consultation;
- On a 10-point scale, the average likelihood to recommend telehealth video consultations to a friend or colleague was 9.16[211].

Colorectal cancer (CRC) clinicians from London have described changes to their services that have involved telehealth since lockdown was introduced[212]. They report that a significant proportion of colorectal face-to-face appointments, including Two-Week Wait (2WW) cancer appointments, have been successfully carried out virtually. Telephone consultations have proved sufficient to discuss red flag symptomatology; however, these have not offset clinical examinations and patients displaying high suspicion of colorectal cancer are invited to attend hospital appointments following consultant-led risk assessments. Faecal immunochemical testing (FIT) is reported to have played a pivotal role in triaging patients and streamlining referrals from primary care to CRC services. However, despite these claims of successful use of virtual solutions, no data is offered to substantiate them.

At an Italian cancer centre, telehealth has been used as part of the reorganisation of genitourinary cancer care delivery[213]. Since lockdown began, telephone calls by clinical nurse specialists to all patients scheduled for care occurred, and their email addresses obtained. MDT members examined the patients' medical records by weekly videoconference meetings using Zoom. Clinical reports containing oncological outcomes and corresponding planning were sent to the patients via e- mail accompanied by a telephone call from the consultant urologist. Face-to-face consultations were carried out only in case of disease progression or recurrence, onset of metastasis or severe clinical complications. The follow-up of 56/60 (93.3%) scheduled patients were successfully managed by the "virtual" MDT, while only 4 patients required a conventional face-to-face outpatient clinic appointment. The proposal for remote monitoring was well received by all patients. Patients were surveyed about their experiences following virtual consultations and, with a response rate of 68.3% (41/60), most of the patients gave a high satisfaction score (mean: 4.7/5) with no serious complaints about major technical issues. Convenience was highlighted as the main advantage and the lack of a clinicians' physical presence was perceived as the main limitation. Furthermore, 38/41 (92.7%) of the patients felt there was adequate data protection and there were no significant concerns about the privacy and security of remote appointments.

The Royal Marsden Hospital Sarcoma Unit has evaluated the impact of telehealth on patients, clinicians, and care delivery in outpatients during the pandemic[214]. This retrospective case series of patients (new patient consultations and those revealing progressive disease) showed that the majority of patients were reviewed using telehealth, with 283/379 (75%) of planned face-to-face appointments converted to telehealth. Patient satisfaction (n = 108) with telehealth was high (mean score 9/10). Around half reported that they would not want to hear bad news using telehealth. Clinicians found telehealth efficient, generally shorter than face-to-face, with no associated increased workload. Clinicians indicated lack of physical examination did not often affect care provision when using telehealth. Most clinicians (n = 17; 94%) believed telehealth use was practice changing; correspondingly, 80% of patients desired some telehealth as part of their future care, citing reduced cost and travel time as principal reasons. Clinicians indicated that CNS presence during telehealth-based care was important. Clinicians indicated a strong preference for video-based appointments instead of telephone. Demographic analysis indicated that survey participants were representative of patients with appointments during the pandemic.

A protocol for the diagnosis and management of head and neck cancer at a London hospital that utilises risk stratification has been developed and tested for feasibility[215]. The protocol aimed to stratify two-week wait referrals into low, intermediate and high risk. Symptoms and risk factors were elicited via telephone consultation and used to complete the head and neck cancer risk

calculator. Low risk patients were referred back to primary care with advice; intermediate and high-risk patients underwent investigation. Early results indicate the feasibility of this model. Of 48 patients referred via the two-week wait pathway, 15 were stratified as low risk (31%) and 12 of these (80%) were discharged without imaging. Two patients' findings warranted a further virtual review in eight weeks, and one patient requested imaging in the absence of clinical review. Seventeen patients were stratified as intermediate risk (35%). Eleven of these 17 patients (65%) had imaging arranged prior to further virtual clinic follow-up, and 4 of the 17 (24%) were discharged without imaging. Two of the 17 patients had further virtual clinic follow-up without prior imaging. There were 16 high-risk patients (33%); 13 of these (81%) had imaging arranged prior to further virtual review. One patient had imaging and clinical review, and a further patient had clinical review only. One high-risk patient was lost to follow-up. A collaborative remote MDT, consisting of a head and neck radiologist and a consultant ENT surgeon, re-triaged all pending imaging requests (organised pre-COVID-19).

Geriatric patients are a particularly vulnerable group and oncology-specific geriatric assessment has been conducted via telehealth approaches[168]. A framework has been produced for multi-domain geriatric assessment that can be conducted mostly by telephone. This telehealth version of the geriatric assessment includes a pre-visit phone screen to identify areas of vulnerability and help guide decision-making for older adults with cancer[216].

Another group considered to be vulnerable at this time are cancer survivors. Challenges faced by cancer survivors have intensified. The pandemic has suddenly and drastically reduced opportunities for social connection and support due to social distancing and limits on access to hospitals and clinics. Survivors face a heightened sense of vulnerability to COVID-19 with a higher perceived risk of disease complication, intensified fear of recurrence and anxiety around disruption of medical services[217][218]. A Psycho-Oncology service within a US cancer centre sought to meet these needs by rapidly transferring their "Survivorship Wellness Group Program" to telehealth and adding COVID-19 relevant content[219]. The programme transitioned to Zoom within 14 days. Operational efforts focused on ensuring patient safety, confidentiality, quality of experience, comfort with technology, and engagement. Content of the programme was modified to accommodate COVID-19 needs for survivors and the restrictions the pandemic had enforced. Participation by patients increased significantly because the programme became instantly accessible to more survivors. Average attendance to the mandatory monthly orientation tripled when it moved online, with the highest recorded orientation attendance in May 2020 over the 2.5-year history of the programme. Mean attendance at weekly meetings doubled. High satisfaction ratings were sustained across the transition to telehealth and participants expressed a wish for the continued delivery of the programme online.

3.3.3   Virtual MDT meetings

Multidisciplinary care is advocated as best practice in cancer care and is an integral component of coordinated cancer care bringing continuity of care and reducing variation in access to treatment – and ultimately improving outcomes for patients[223]. Several cancer centres have described the introduction of virtual MDT meetings[205][212][225]and much of the professional guidance refers to the need to switch to virtual MDT meetings during the pandemic.

A survey of 50 practicing UK and US physicians (48% response rate) who have been using virtual MDTs since mid-March found that the vast majority (83.3%) of those surveyed reported that virtual

MDTs provide the same standard of care as face-to-face MDTs and that two-thirds would support the use of virtual MDTs following the end of the current pandemic[226]. Additionally, the majority reported that virtual MDTs perform equal to or better than their in-person counterpart across all factors deemed intrinsic to the success of an MDT. However, some concerns remained regarding the quality of the communication, with 42% of those surveyed stating that they prefer in-person communication as it 'builds stronger relationships', 'encourages more robust conversation', and allows for the 'detection of non-verbal cues'. In contrast, a third of respondents found the virtual environment to be better than the physical environment and that it encouraged more durable, organised chairing which in turn reduced the number of people speaking at any one time. Additionally, a significant majority (91.7%) found the viewing of images and histological samples to be equal or better in the virtual space, whilst 100% stated that continuity of care was equal or better, dispelling claims that the use of videoconferencing may be disruptive to clinical care.

A survey of participants at virtual MDT meetings at a single UK cancer centre found similar levels of enthusiasm for virtual MDT meetings[227]. The majority (75%) of those surveyed reported that virtual MDTs provide the same standard of care as face-to-face MDTs and over half (55.6%) would support the use of virtual MDTs following the end of the current pandemic, with the remaining 44% citing difficulties in connectivity and technology as reasons for their reluctance to attend virtual MDTs in the future. Similarly, participants were satisfied with the depth of discussion taking place over virtual platforms and were able to access all relevant patient information to plan treatments.

3.4 Patient and clinician experiences of virtual approaches to cancer care during the pandemic

The Linda McCartney Centre is a patient-centred cancer centre at the Royal Liverpool University Hospital, UK. It offers a specialised psychology service for people experiencing significant distress related to cancer by a team of 6 psychologists, several trainee psychologists and an assistant psychologist. It received over 400 referrals last year from the North West of England. Ways of working have been changed during the pandemic in order to continue to offer therapy, clinical supervision and staff training and support via videophone[228]. Psychologists were surveyed, and patients were interviewed about their experiences. Patients who had declined therapy and opted instead to remain on the waiting list were also interviewed in order to understand their experiences. High rates of engagement by clinicians continued despite "teething difficulties" regarding home-working dynamics, including lack of privacy, loss of non-verbal communication, difficulties sharing formulation diagrams electronically, impracticalities of working with inpatients, and complications to behavioural work.

Patients expressed surprise about the smooth transition to remote working. Several clinicians noted patients' relief at being able to access therapy without needing to return to somewhere they associate with trauma – the hospital. Patients, who declined continuing their course of therapy during COVID-19, spoke of their concerns around being as honest in remote therapy as they would be in face-to-face therapy. They expressed concerns that this may give a false impression that they did not need psychological support. The loss of being able to prepare for, and reflect on, therapy whilst driving to and from appointments was highlighted. Others raised concerns that their sessions are "being used up" in managing the impact of COVID-19, rather than in addressing their initial cancer-related goals.

Experiences of the move to virtual family meetings for inpatient telehealth palliative care at a US Palliative Care Centre have been described[229]. Between March and April 2020, 67 e-family meetings for 63 unique patients were conducted. Patients' diagnoses were not reported. On a five-point Likert-type scale, the mean clinician rating of the e-family meeting overall quality was 3.18 (SD, .96). (Note: for categorical data such as a Likert scale, median scores rather than means should have been reported). Overall ratings by family members of the e-family meetings were high. Over 80% of respondent families participants reported that they agreed or strongly agreed that they were able to ask all of their questions, felt comfortable expressing their thoughts and feelings with the clinical team, felt like they understood the care their loved one received, and that the virtual family meeting helped them trust the clinical team. Of patients who were able to communicate, 50% of family respondents reported that the e-family meeting helped them understand their loved one's thoughts and wishes.

Survey data of patients at a cancer centre in Saudi Arabia revealed a general acceptance by patients to telecommunication as a substitute to face-to-face consultation with their physicians during a pandemic[230]. A phone call as the method for communication was preferred by 92% of respondents followed by the electronic patient portal, mobile application, video consultation and text message preferred by 75%, 76%, 73%, and 72%, respectively. A total of 22% of patients reported that their medical cancer care had not been affected by COVID-19. 61% knew that they are more susceptible to COVID-19 infection and 91% of respondents supported the notion of digital health solutions in the caring of cancer patients in the future.

Joining the dots across health and care

A qualitative study conducted at a cancer centre in the US explored 56 HNC patients' perceptions about synchronous, 2-way video-based virtual consultations as an alternative to face-to-face consultations during the pandemic, with data gathered from both survey-based methods and unstructured telephone interviews[231]. The primary benefits of the approach were reported to be accessibility, cost and time savings. Primary limitations included the ability to perform a physical examination. Most patients expressed a willingness to participate in future remote visits if appropriate or necessitated by social circumstances. In response to early patients' stated concerns about access and technical difficulties, the service implemented increased communication ahead of the consultation in the form of an e-mail or message through the patient portal at the time of scheduling with information about how to download and set up the software. In addition, the office medical assistant would call the patient on the morning of the consultation to troubleshoot any issues or concerns the patient had about the software or the consultation.

Another publication from the same centre reports a larger, survey-based study which addressed patient satisfaction with video-based telehealth consultations in HNC[232]. A validated survey from the larger telehealth literature was used to gather data. The majority of patients reported high satisfaction with telehealth consultations, with average scores higher than 5/7 in the majority of components of the survey. The average score across all questions was 6.01/7. Patients gave the item related to whether the system could do everything they would want it to the lowest score with an average score of 5.27. They reported that this was because telehealth visits do not allow for in-depth physical examinations including flexible laryngoscopy. Items related to interface quality scored highly with patients particularly satisfied with platforms that allowed for screen sharing, which enabled clinicians to show and explain imaging findings. Patients also reported high satisfaction with interaction quality, indicating that the telehealth consultation was effective for clinician-patient interactions. No patients expressed doubts regarding the security or quality of care provided by the virtual encounter.

Similarly, a tertiary cancer centre in Germany explored 101 patients' views about the implementation of virtual management of their advanced genitourinary cancers during the pandemic[233]. Most patients are directly or indirectly able to communicate via e-mail; the rest are accessible on the phone. A total of 92 patients responded to a survey about the current situation, and current and long-term employment of telehealth. Anxiety, perceptions, and expectations were assessed on 10-item Likert scales. Results indicated that patients' anxiety of cancer was greater than that of COVID-19, and patients oppose temporary treatment interruption. They prefer to continue with face-to-face visits to the hospital even if no treatment administration is planned. In terms of consultations rather than treatment delivery, virtual discussion of staging results and therapy decisions was generally well accepted. The preferred medium for digital communication was phone (76.9%), e-mail (56.7%), patient-reported outcome applications (22.0%), and video call (14.3%). For future engagement during the pandemic, 62.6% of patients prefer to maintain face-to-face appointments as opposed to complete remote care, but they do accept the inevitability of remote care during the pandemic. Beyond the crisis, maintaining telehealth had low preference rates, with high acceptance for external laboratory controls (60.9%) and online visit management (48.9%), but lower acceptance for remote treatment planning including staging discussions (44.6%).

Patients receiving urological care at a German urology department were assessed for their suitability for videoconferencing and the patients' perspective was explored by evaluating their

willingness for videoconferencing as an alternative to face-to face consultations[234]. A total of 399 consecutive outpatients with scheduled appointments at the tertiary centre were contacted by telephone and completed a structured phone interview. Suitability for telehealth was assessed by a panel of physicians from their overall condition, their risks from COVID-19 and their stated willingness for telehealth. Most patients (63.2%) were deemed suitable for telehealth. When asked, 84.7% of patients wanted a video consultation rather than a face-to-face consultation. There was no difference in preference between those with an oncological (mean 86%) or benign diagnosis (mean 85%). The reason for refusal for telehealth was mostly technical limitations (17.3%); 2.5% prefer personal contact with their physician.

Awareness of, and views on virtual patient management during the pandemic amongst Gulf and Arab countries' oncologists were explored via a web-based questionnaire[235]. A total of 222 completed surveys from 10 different countries in the region were received. In total, 82% of respondents were aware of virtual clinics and 59% had been involved in a virtual clinic, whilst 79% were aware of virtual multidisciplinary tumour boards and 64% had been involved in such a board. Challenges faced by respondents regarding virtual management were the lack of physical examination (60%), patients' awareness and access (59%), the lack of physical attendance of patients (42%), technology support (37%), and safety (35%). In total, 40% of respondents reported that patients were satisfied with virtual management, while 18% indicated patients were not satisfied, and 43% answered, "I don't know."

There was enthusiasm for virtual solutions from oncologists. When they were asked if they prefer to manage cases virtually, 46% responded "Definitely," 30% responded "Probably," 10% answered "Neutral," 11% said "Probably not," and 3% said "Definitely not". However, when asked if they are likely to continue with virtual management after the pandemic, 36% of respondents indicated they would, while 51% said they will not, and 14% answered, "I don't know."

3.5   Breaking bad news remotely

Receiving bad news is a significant experience for patients and family members. Evidence suggests that they want bad news delivered in an appropriate setting, in a manner consistent with their personal preferences, and have their psychological needs attended to within the context of an established relationship[236]. The skill and art of breaking bad news are an essential part of the oncology profession. Breaking bad news, defined as "any information which adversely and seriously affects an individual's view of his or her future", includes not just the initial diagnosis but also relapse, palliative care transition, and end-of-life transition[237].

There is rich pre-pandemic literature on breaking bad news in face-to-face consultations, which is beyond the scope of this review. Various models for breaking bad news have been developed and implemented, with the six-step SPIKES (Setting, Perception, Invitation, Knowledge, Empathy/Emotion, and Strategy/Summarize) protocol being one of the most extensively used[238] [239] and which is recommended by the Medical Defence Union (MDU)[240]. The steps include:
- Setting up the interview;
- Assessing the patient's perception;
- Obtaining the patient's invitation;
- Giving knowledge and information to the patient;
- Addressing the patient's emotions with empathic responses;
- Strategy and summary.

The goal is to enable the clinician to fulfil the four most important objectives of the interview disclosing bad news: gathering information from the patient, transmitting the medical information, providing support to the patient, and eliciting the patient's collaboration in developing a strategy or treatment plan for the future.

The *Talking about Dying* report from the RCP (2018) offers advice and support for any doctor on holding conversations with patients after the diagnosis of a progressive or terminal condition[241]. Key recommendations:
- Ask the patient if they would like to have the conversation and how much information they would want;
- All healthcare professionals reviewing patients with chronic conditions, patients with more than one serious medical problem or terminal illness, should initiate shared decision-making, including advanced care planning in line with patient preferences;
- Conversations about the future can and should be initiated at any point. The conversation is a process not a tick-box and does not have to reach a conclusion at one sitting;
- Be aware of the language you use with patients and those they have identified as being important to them and try to involve all the relevant people in agreement with the patient.

Traditionally, clinicians ensure end-of-life discussions and breaking bad news conversations are performed through face-to-face interactions. Breaking bad news remotely via telehealth is a completely new endeavour and the currently available models may not apply. Despite normally being such an integral part of an oncologist's practice when working face-to-face, this facet of practice has received scant attention within professional guidance or by research related to telehealth generally, either before or during the pandemic.

One exception to this is Health Education England, who have established an evidence-based, online framework for unwelcome news conversations for health and social care professionals, for use during the pandemic as part of their NHS e-Learning for Health programme[242]. It has several recommendations:

- "Firstly, prepare by defining the key message of the conversation: centre on your compassion and remember that you speak on behalf of your team. Begin the call by establishing names and identities (yours and the person you are speaking to) and ascertain that they're in a safe place for a conversation."
- "Progress a conversation about worsening illness by asking the other person to describe what they already know: this helps them to recognise the pattern of events as they describe it and allows you to pick up the story to add further details. For announcing a death, simply express sorrow—a warning shot—before giving the news."
- "Tone of voice and empathic language are important: bad news is best told in simple, non-ambiguous words. Listening is as important as speaking: allow silences, acknowledge emotions, and reassure that weeping is acceptable."
- "Finally, closure is reached by offering to answer further questions, helping the person to plan what they will do next, clarifying arrangements for next steps like when there will be more news or how to collect a death certificate, and always restating empathy."
- "After writing up the conversation, taking a moment for self-care and reflection is important."

An oncologist who has had the experience of breaking bad news remotely during the pandemic has described the challenges[243]. Arranging for privacy is difficult. Some patients need assistance with the telehealth application. Some patients engage with the virtual solution at unexpected locations (driving, shopping) or together with young children. Involving significant others when many patients are under social isolation means that the patient is often alone when interacting. Making a connection with the patient is hampered. The most basic form of connection between human beings involves a physical interaction (a handshake, a hug) and body language (eye contact, a smile). These are obviously absent or, in the case of body language, constrained. Managing interruptions are difficult in telehealth when the platforms used may be prone to communications interferences, lapses, delays, or cuts. Adequate closure at the end of a consultation cannot be done through telehealth.

Doctors' advice on how to speak about serious issues to patients and their families when you cannot see them face-to-face has been collated and published in the British Medical Journal[244]. Whilst this is based on experience and opinion, the credentials of the contributors are unclear. Summarised suggestions include:

- Use a video-call rather than the telephone if possible;
- Apologise for the virtual nature of engagement and explain its necessity;
- Keep the structure of the conversation similar to a face-to-face consultation, and prepare in the same way you would if you were relaying the information in person;
- Make sure you and the patient are both in quiet rooms and unlikely to be interrupted. If possible, ensure they have somebody with them;
- Try to have someone the patient has previously met to break the news;
- Avoid using medical jargon or ambiguous terms;
- If they're distressed, acknowledge this sensitively and give time and support before carrying on;
- Have a robust follow-up next-actions plan which begins with a named person contacting the patient later that day;

- Before closing the conversation, check whether the individual has any further questions;
- Give the patient a contact phone number should they need additional support;

Finally:
- There is no single right way to do this: you can only do your best from a place of kindness.

Experienced telehealth users from the Cancer Centre of South Eastern Ontario, Canada have offered some suggestions from their experience in adapting the SPIKES protocol using telehealth when discussing serious news[245]. They suggest that serious news can be delivered through telehealth (video or audio) but requires attention to extra details that are taken for granted in a physical encounter. This is summarised in a table taken directly from their publication.

Table 2: Selected Considerations for Approaching Serious Discussions Remotely With Example Phrases (Taken from Holstead and Robinson[245])

SPIKES Protocol	Telehealth Considerations	Examples
Setup		
Before meeting	At the time of ordering a diagnostic test, request permission to discuss the results with a patient, regardless of the test result.	"We expect to have the results of your biopsy in 2 weeks. Is it okay if we call you by telephone/videoconference to discuss the results at that time?"
At the meeting	Similar to silencing pagers and cell phones, mute/defer notifications on your computer and arrange so that you are not intruded upon during the appointment. During the introduction, describe your setting and members present. If on video, describe what you see and inquire about whom may be present or listening to the discussion.	"Hello, I am Dr X. I am calling from my office to discuss the results of your biopsy. I see that you are in your living room and sitting down. Can you see/hear me clearly? Do you have time to discuss your test results now? Who is there with you? Is there anybody else present and able to hear our discussion?"
	Privacy is important to patients. Explicitly state that information shared is confidential. Inquire regarding whether the discussion is being recorded.	"I am sitting down, my office door is closed, and I have the volume set so that our conversation will not be overheard. We are using a secure connection that is not being recorded on our end. Please let me know if you are recording anything."
Perception, invitation, knowledge	Disciplined use of communication skills, such as signposting or teach-back, can help to overcome the shortcomings of remote conversations. Anticipate delayed audio transmission by using short sentences and allowing longer-than-usual pauses after statements to give time for patients to ask questions. If videoconferencing, have the camera at eye level or slightly above. Have a simple backdrop behind you to minimize distractions.	"I am going to tell you the results of your biopsy/the treatment options for your cancer. I will be asking you questions often to ensure that you can hear me clearly and understand what I am saying. Please let me know if you have any questions at any time."
Empathy	With telemedicine, displaying empathy can be difficult, but not impossible. Sometimes a prolonged silence can take the place of offering a tissue or an understanding touch that would be used in real life.	"I understand that this is difficult news to hear, especially over the phone/by video." "I can hear that you are upset. Please share your thoughts with me."
Summary	Plan for follow-up by addressing the setting where the next meeting would be. Deliver handouts through mail or electronic transfer.	"Do you have any further questions? I will schedule a follow-up telephone/videoconference/in-person meeting in 2 weeks. I would like to share some handouts with you. Do you have any objections with us sending this to your e-mail address?"

The authors propose a modified version of SPIKES: WIRE-SPIKES to account for the additional considerations for telehealth:

What technology is preferred (telephone or videoconference);

Identify members present and environment of all participants;

Repeatedly check in using signposting, teach-back, and summarizing; and

Extend time for pauses, questions, and descriptions.

Online resources are tabulated in Appendix 2.

3.6   Impact of virtual solutions on health inequalities and inequities in provision

The challenge for healthcare services in the 21st century is to ensure that everybody is included in the digital health revolution. Digital exclusion has been falling recently and latest data reveal that 85% of EU citizens go online weekly – but this still means a significant number of the European population do not. A person may be digitally excluded because they cannot access or afford devices, data, or Wi-Fi, or because they do not possess the necessary skills. Digital exclusion is significantly influenced by income, language, literacy, culture, and ethnicity. Data from 2019 show high number of non-users among people with low education levels (24%), among those aged between 55 and 74 (23%), and the retired and the inactive (26%)[246] [247].

Those who are least likely to be online are exactly those who make the most use of health services and experience the greatest burden of ill health. There is evidence that older people, those with no educational qualifications, people whose first language is not English, and people with literacy problems or learning disabilities are least likely to engage with digital communication and have been shown to be less likely to use digital clinical communication methods for healthcare purposes[248]. The rapid growth in digital technologies can bring transformative opportunities. Benefits to patients and to health care systems include more involvement of patients in their own care, more convenience and time savings, reduced costs, and better health outcomes[9]. But this transformation also threatens to deepen the digital divide between the active users capable of exploiting ever improving technologies, and those who struggle to overcome the barriers to getting online or using them. Digital technologies have the potential to widen the gulf between those at risk of health inequalities and the rest of the population[249]. If more and more healthcare services rely on digital technologies as alternatives to face-to-face encounters, these digitally excluded people are in danger of being disadvantaged.

There are also wider issues relating to health inequalities revealed by the pandemic. A rapid needs assessment has been conducted to urgently identify and describe the needs of routinely excluded groups arising from the COVID-19 pandemic in England[250]:

Issues relating to the impact of digital healthcare in primary care on health inequalities were highlighted by a previous literature review conducted by SCW CSU in 2019[39], and there is reason to presume that they also apply to secondary healthcare provision:
- A significant minority of people in the UK do not have access to the internet, and there is a risk that shifting towards greater use of online services will exacerbate health inequalities;
- Young people, those with tertiary education, the employed and students are more likely to use digital alternatives to face-to-face consultations;
- Face-to-face consultation rates appear to be slightly higher in least deprived areas, and telephone consultations slightly higher in the most deprived areas, but there are no strong relationships with deprivation for these consultation types;
- Some groups of patients, for example those who are visually impaired or those with learning disabilities, may find that alternative approaches are not fully accessible to them;
- For those for whom English is not their first language, there are issues with using interpreters when using virtual alternatives to face-to-face consultation that need addressing.

There is pre-pandemic evidence that patients with cancer living in more remote, rural locations do not have equal access to virtual solutions[251]. There is also limited evidence emerging of the impact

of the digital divide on cancer patients during the pandemic. Oncologists have observed differential access to telehealth, timely diagnosis, and treatment for BAME populations[246]. One US oncologist has reported that during the first four weeks of using video consultations, about 30% of patients were not able to participate due to lack of access to a smartphone or broadband and a switch had to be made to use of the telephone[252].

There is evidence that access and communication during a healthcare encounter are important mediators of outcomes for persons with disabilities and several barriers and challenges related to the use of telehealth during the pandemic remain for these individuals , particularly those who are deaf or blind or for persons with cognitive disabilities[253]. Traditional tele-oncology cannot be extended to patients with impaired hearing, vision, or cognition. In addition, linguistic disparities must be considered to avoid miscommunication and feelings of anxiety when communicating with people belonging to ethnic minority groups. It is suggested that the delivery of telehealth has to be modified on a case-by-case basis in such circumstances[214].

Digital exclusion's impact on health is unquestionable. With the acceleration of technological advancement, policy commitments within the NHS Long Term Plan aimed at supporting digital inclusion must be realised, with focus placed on the needs of people who are most socially excluded. The RCP has produced guidance RCP guidance: *COVID-19 and mitigating impact on health inequalities* for use at this time[254].

Suggestions for addressing this issue have been found in the recent literature. Patients' lack of knowledge, unfamiliarity with communication technology, and fear of the unknown are well-known causes for lack of adoption to telehealth, and patient education is needed to address this. Creating handouts on best practices for telehealth and other educational resources may ease patients' anxiety and enhance their experience with virtual consultations[180]. It has been suggested that the effects of exclusion can be mitigated by making small changes to how services operate. Health services can offer a call back service or Freephone numbers, especially where there are long waiting times or interpretation services are needed. Face-to-face healthcare provision should be prioritised for people who are digitally excluded.

3.7 Ethics, risk management, governance and confidentiality requirements

Use of digital technologies in healthcare relies on recent advances in the collection and analysis of ever-increasing amounts of data from both patients and healthy members of the public, which has led to some new ethical and policy challenges. These range from the need to adapt current evidence-based standards, to issues of privacy, oversight, accountability and public trust as well as national and international data governance and management[255][256].

3.7.1 Privacy and security

Much of the debate about big data uses in healthcare has focused on privacy. Protecting privacy is a complex challenge, as advanced analytics can be applied to data for various purposes. Standard mechanisms of protection such as anonymisation, notice and patient consent take on new dimensions in the virtual world. Anonymisation technologies, even if robust, still mean re-identification may be possible in the future. Videos of consultations are almost impossible to anonymise fully, even with pixilation[41]. Data security has also been a challenge, with cyber-attacks, hacking of databases and data kidnapping being reported. The UK's Information Commissioner's Office notes that the health sector accounts for most of the data incidents reported to them[257].

3.7.2 Consent

A valid consent is a must for remote consultation and hence an explicit patient consent is required if a clinician initiates a telehealth consultation as per NHS England and NHS Improvement, and General Medical Council (GMC) recommendations[139][258]. If a patient starts the telehealth consultation, then the consent can be implied. However, it is important to safeguard personal and confidential information. Patients should be informed about the limitation of remote consultation. Patient capacity to make decisions must be assessed and recorded. Consent should also be taken if the video consultation is to be recorded[259]. These recordings should form a part of patients' medical records and should be safely stored. Consent for recording should be documented in the records.

3.7.3 Confidentiality

Principles of medical ethics, including professional norms for protecting patient privacy and confidentiality as laid out by the GMC should be upheld and practiced. Remote consultation should be carried out in an appropriate environment with consideration of privacy and sensitive information. The patient should be reassured about the nature of remote consultation and that the conversation is secure and confidential.

3.7.4 Information governance and data protection

It is essential that data is stored, transferred, protected, or disposed as per Data Protection laws and NHS Digital Information Governance guidelines to avoid any potential breaches.

Relevant guidance and advice (see Appendix 2)

Principles of safe video consulting in general practice during COVID-19[143]
This guide from NHS England and NHS Improvement, published in May 2020 is aimed at NHS general practice staff who are consulting via video with patients at home, with key principles, which apply to practitioners across wider primary care. It was developed in collaboration with the Royal College of General Practitioners (RCGP)

NHSX COVID-19 information: governance advice for staff working in health and care organisations[260]
NHSX has provided guidance around information governance and allowed the use of apps such as WhatsApp, FaceTime, and Skype

COVID-19: video consultations and homeworking[261]
BMA advice for doctors in all settings in getting homeworking equipment, when to consult patients via video, approved NHS tools for remote consultations and tips for running them.

Remote consultations[262]
Guidance from the GMC as doctors are being asked to triage and treat patients by remote consultations where possible to protect staff and patients from infection of COVID 19.

3.8   Organisational development and workforce requirements

The use of video consultations fundamentally changes the nature of clinical care. The change includes the need to develop new ways of organising clinical and administrative work and to train and support both staff and patients in technology use. Research has shown that the implementation process for this service model can be difficult and resource intensive, with multiple challenges in relation to workability and integration of the service model in routine clinical practice[40]. Training and learning of skills in dealing with remote consultations is essential to provide safe and effective patient care. Supervision should be appropriate with regular review of practice[256].

Evidence from research undertaken by a group with experience in the introduction of such a service within routine clinical practice in secondary care pre-pandemic has highlighted that it is important to take a system-wide approach to implementation, involving national and local strategic leads. They have found that successful introduction and scale-up depended on the presence of innovators; champions and change agents[263]. Because of their experience, they have produced guidance for implementing and using video consultations in clinical practice during the pandemic and beyond (see below and Appendix 2).

They also make the following summary recommendations:
* Attention should be paid to technological infrastructure, ensuring adequate resourcing for equipment, and a review of how different video platforms relate to work practices;
* Collaboration across multiple organisational actors is essential for restructuring work practices and managing unintended consequences;
* It is important to promote a clear and positive narrative about the technology and ways to monitor the effects of the change in a timely way;
* There should be plenty of time for capacity building and sharing best practice, as well as discussion with staff and patients about how these changes affect their service;
* It requires leaders to proactively engage with local and national decision makers to influence and align developments with the various commissioning and regulatory structures that affect implementation on the ground.

Relevant guidance and advice (see Appendix 2)

Clinical guide for the management of remote consultations and remote working in secondary care during the coronavirus pandemic[139]
NHS England and NHS Improvement guidance for the management of remote consultations and remote working in secondary care during the coronavirus pandemic including the following recommendations relevant to workforce:
* Consider establishing some specific staff focus on this e.g. specialist nurses +/-some consultants
* Consider using recently returning retired staff who are in the higher-risk groups for being vulnerable to the effects of coronavirus
* Consider using any staff who are isolating but could support virtual clinics
* Ensure operational and admin teams are closely involved in the implementation to support the new ways of working, including the changes to clinic templates and appointment notifications etc.

- We recommend that you set up options for conference calling between health and care professionals so Multidisciplinary Team Meetings can be carried out remotely

University of Oxford guidance[263]
Prof Trish Greenhalgh's team have produced evidence-based guidance on setting up and running video consultations during the COVID-19 pandemic and beyond and have produced guiding resources and materials in partnership with Barts Health NHS Trust. These resources are available for services to adapt and use (some key documents are also included as online supplementary materials).

4. Discussion

The novel coronavirus (COVID-19) pandemic has led to an unprecedented disruption of all healthcare services, requiring immediate changes in models of care across the globe. The speed at which COVID-19 has spread, the fact that healthcare premises could be sources of infection and the need to protect all patients and healthcare staff, and prevent community transmission, has focused attention on virtual models of care that avoid face-to-face contact between clinician and patient. There have been recommendations from NHS England and NHS Improvement to replace the traditional face-to-face consultation with video, telephone or online consultations, and clinicians across the NHS are rapidly adopting virtual care to transition from the traditional in-person care model to digital platforms. A number of commercial platforms now offer seamless video consultation, which have been approved for use within the NHS.

4.0.1   Use of virtual solutions pre-pandemic

The use of telehealth approaches to deliver healthcare across both primary and secondary care in the NHS is not new and has already been well described. There is enthusiasm from policy makers for approaches to accessing healthcare services that offer an alternative to the traditional face-to-face consultation. However, research from both primary and secondary care settings has indicated that uptake of such services had been slow up to now. Results from studies undertaken in primary care indicate that patients still prefer face-to-face overall, despite enthusiasm for their convenience. Evidence suggests that alternative approaches appear to be more appropriate for discrete and simple problems, especially as there is the potential for disruption to continuity of care. Telephone or video consultations may lead to increased work for GPs, who have also expressed concerns over technical problems and problems associated with the inability to perform a physical examination, leading to fears of poor clinical decision-making.

Research undertaken in secondary care has indicated that video outpatient consultations are acceptable to both patients and clinicians, and are safe. However, across both primary and secondary care, data on impact on objective clinical outcomes or on cost-effectiveness is lacking There is no comparative evidence to demonstrate whether one alternative approach (e.g. video versus telephone) is superior to another. In general, studies evaluating the impact of alternative approaches to face-to-face consultations is of low to moderate quality with significant potential for bias, limiting the generalisability of the findings.

The pandemic has had a particular impact on patients across the cancer pathway. They have been identified as a particularly vulnerable population who can develop severe COVID-19 symptoms and are at a higher risk of more serious complications from the disease. National cancer screening programmes have been halted. Diagnoses have been delayed, and data from NHS services have shown a drop in urgent cancer referrals, first cancer treatments and general outpatient appointments, all of which has contributed to a negative impact on the emotional wellbeing of many patients.

Timely access by patients to care is critical for cancer patients. Delays in diagnosis and treatment can have profound negative impacts on outcomes, perhaps more so in cancer than in other conditions. Innovative solutions to mitigate SARS-CoV-2 exposure and to ensure continuity of care have been necessary, and the delivery of cancer care has changed faster than ever envisioned. Most major cancer organisations have released general guidelines on managing patients with

cancer during the pandemic, and these have included overwhelmingly endorsement for the use of telehealth to facilitate communication with patients, provide continuity of overall management and to continue to operate MDT meetings. Priority groups for surgery, systemic anticancer treatments, and radiotherapy have also been set.

Whilst many of these recommendations involve criteria to determine which patients should still be seen face-to-face, there are no guidelines that recommend either that face-to-face consultations should continue for all patients, or that all consultations should cease. Guidelines rarely cover the practical aspects of undertaking virtual consultations. Not all of the guidelines have a robust evidence base, some have been developed using consensus techniques, relying on professional opinion and expertise only. Practical advice about how best to conduct a remote consultation is lacking, with most guidance focusing on overall re-organisation of services.

Evidence analysed in this review has shown that telehealth has been used in most stages of the cancer pathway for some time. Literature indicates that this can broadly be divided into three uses:
- Managing patients' care at each stage of the treatment pathway;
- Treatment follow-up and side-effect monitoring/toxicity management;
- For the delivery of psycho-educational or psychosocial interventions.

Both telephone (predominantly nurse-led for follow-up purposes) and video consulting have been widely used, with online consulting less frequently used.

There are a few small RCTs comparing virtual consultations with face-to-face consultations. These studies lend support to the conclusion that, in selected patients, virtual consultations (video or telephone) are at least non-inferior to face-to-face ones in terms of the outcomes the various studies assessed. However, they do not address the question of how best to establish the service in practice.

The majority of the literature comprises observational studies, or systematic reviews of randomised and non-randomised studies. The heterogeneity of study design, together with the disease-specific nature of the majority of studies, stage in the cancer pathway and differing nature of the interventions, data collection methods, and outcomes measured presents difficulty in generalising findings. However, this review has revealed some consistent findings:

- From the service delivery perspective, studies regularly demonstrated the feasibility and safety of introducing virtual solutions, with minimal problems with software and other infrastructure issues.

- From the patients' perspective, acceptability and satisfaction of support delivered by virtual consultations for cancer patients during or after therapy suggests it is convenient, provides positive personal experiences, enhances accessibility to healthcare professionals in a timely manner, and provides a more relaxed, familiar environment in which to facilitate potentially sensitive health care discussions.

The convenience of virtual interventions was evident across most interventions and particularly for follow-up, which necessitates frequent clinical consultations for patients. "Convenience" was

reported across intervention categories, in terms of facilitating personal organisation and in time and travel costs.

The effect of these interventions on clinical outcomes is less well researched. Impact on symptoms appears variable. There is evidence that virtual consultations can reduce symptoms of depression, feelings of anxiety, fatigue and emotional distress and can lead to improved self-care. Evidence of effectiveness for positive impact on pain and quality of life is variable.

The use of telehealth, particularly via video, in palliative care can provide a means of supporting and remotely monitoring patients with advanced illness who wish to remain at home. Technology can be used for communication between health care professionals and patients and/or relatives as well as for symptom control and clinical assessment of patients. There is evidence that most patients, relatives, and professionals are positive toward the use of video consultations, however, current evidence lacks consensus on if, and when, video consultations can replace face-to-face specialised palliative care consultations.

Clinicians expressed concerns about the essential nature of a physical encounter in establishing a relationship, something that they describe as being so important in this stage of a patient's journey. The benefits of video consultations in helping to facilitate inter-professional and patient–professional discussions, enabling integration of general and specialised palliative care, where different health care professionals and/or the patient and relative(s) are often placed at different locations have been highlighted. Impact on symptom burden and on quality of life is variable and unclear.

4.0.2   Use of virtual solutions during the pandemic

There is evidence from across both primary and secondary care that NHS services are rapidly adopting digital technology and virtual solutions to providing consultations, with telehealth recognised to be the safest way to deliver care for a large percentage of patients with cancer.

Given the pressure on services and clinicians that the pandemic has caused, there have been a surprising number of articles published since the start of the pandemic relevant to use of telehealth in cancer care. However, many of these have been descriptive with little if any evaluative content. Nevertheless, there is evidence that teleconsultations have been implemented swiftly and comprehensively. Very few patients express dissatisfaction with the switch from face-to-face consultations, with very high satisfaction levels recorded. Patients understand the need for these arrangements at this unusual time. There is limited evidence that systems are easy to use and some evidence that patients would be happy to use telehealth solutions again, perceiving it to provide the same standard of care as face-to-face consultations.

Patients do not have concerns about privacy and security and, as seen in studies conducted pre-pandemic, convenience is seen as a major advantage along with accessibility. Limitations around the ability for physical examination is an issue raised by both patients and clinicians. As one oncologist put it:
"Patients undergoing oncologic care are a unique subset of patients who often form very close, longitudinal relationships with their providers. They are reliant on us, every time, to tell them that they are disease free or to guide them through options for the next steps. Our virtual declaration of ''no evidence of disease'' is not as reassuring as when we examine, touch, and interact with our

patients in the usual way. This emotional burden is borne not just by our patients but also by us as their physicians, too. Thus far, we have found that telemedicine both meets and yet falls short of our patients' needs and our goals as providers. Is this all that we can do for our patients?"[264]

However, despite this major limitation, clinicians have been generally satisfied with the ability to continue to triage and provide care safely and effectively, even though adjustment has been needed to new working arrangements that perhaps initially felt more time-consuming. There is limited evidence that clinicians prefer video to telephone for consultations, whereas two non-UK studies showed a preference for telephone by patients. There is evidence that MDT meetings can successfully be undertaken virtually and some clinicians have expressed a desire to continue this approach post-pandemic.

It is worth noting that as expected there have not been any before and after studies conducted, where data collected pre-pandemic has been compared with that collected during the pandemic. To a certain extent, both patients and clinicians face the choice – virtual consultations or nothing. The extremely high satisfaction scores patients have given virtual consultations during the pandemic (even higher than those seen in studies conducted pre-pandemic) perhaps indicate that patients are largely grateful for the continuity of care, and this will have influenced their responses. Equally, the literature shows the commitment by clinicians to continue to care for their patients as best they can under the circumstances. Certainly, there is evidence that cancer patients are more concerned about their condition than they are about COVID-19 and value the continuity in care. Evidence for patients' willingness to engage with virtual consultations when face-to-face access to health care is restricted comes from a study which showed that the US population's interest in telehealth increased as the number of COVID-19 cases increased, with a strong correlation between population interest and COVID-19 cases reported[265].

There is no evaluative research exploring the use of remote consultations to deliver bad news during the pandemic. However, recommendations from experienced clinicians have been made for adapting pre-existing well-known models used for breaking bad news to suit virtual consultations. These emphasise issues such as considering what technology is preferred (telephone or video); identifying members present and considering the environment for all participants; repeatedly checking in using signposting, teach-back, and summarising; and extending time for pauses, questions, and descriptions.

Importantly, this review of available literature cannot tell us which telehealth approaches are best suited to which specific populations at which stage of the treatment pathway, nor when to determine when a face-to-face consultation should be used in preference to a virtual consultation either during the pandemic, or when services return to normal. It has been suggested that screening patients by phone before they come to a clinic may help to eliminate potentially redundant routine follow-up visits and lower the risk of infection.

4.0.3   Other issues relating to virtual alternatives to face-to-face consultations
This review has also highlighted issues related to using virtual solutions for care that extend beyond effectiveness and patient acceptability. The impact these can have on health inequalities and inequity in provision is an important consideration. Older people, those with no educational qualifications, people whose first language is not English, and people with literacy problems or learning disabilities are least likely to engage with digital communication and have been shown to

be less likely to use digital clinical communication methods for healthcare purposes. There are particular issues for those who are deaf and/or blind. Face-to-face healthcare provision should be prioritised for people who are digitally excluded.

Implementation of video consultations fundamentally changes the nature of clinical care. Sufficient attention needs to be paid to training for clinicians and patients in the use of digital health technologies to ensure they are used effectively, as well as to re-organising clinical and administrative work to support its implementation.

Issues relating to privacy and security, consent, confidentiality, and information governance and data protection, and how these may be operationalised in virtual situations should not be ignored. If using platforms that are not fully integrated with patient health records, lack of reliable access to patient records for history, allergies, and medications may increase risks. Importantly, lack of a physical examination may mean failure to deliver high quality clinical care and situations that rely heavily on a through clinical examination still need a face-to-face consultation. There is useful guidance from professional organisations, which can help with these issues.

4.0.4   Gaps in the literature

The growth in virtually-delivered interventions, especially in the form of smaller 'pilot' or 'feasibility' studies is evident, however patients perspectives are often not featured within the study aims, and therefore are not part of a rigorous study design, leading to low quality qualitative data derived through post hoc comments, informal feedback or collected via unvalidated survey techniques. Future research in this field should reflect the need to incorporate a high-quality qualitative component, in order to ensure that the individuality of participants and their experiences are represented and to facilitate a truly patient-centred approach with a personalised, tailored model of care.

Research studies describing or evaluating virtual alternatives to face-to-face consultations both pre-pandemic and during the pandemic largely focus on the management of cancer patients from treatment onwards. There is little focusing on diagnosis, and especially in delivering bad news.

Cost-effectiveness data is particularly lacking although there is some limited evidence from a UK perspective that virtual solutions can save patients' cost. Impact on NHS costs is uncertain, as is impact on health care utilisation.

4.0.5   Virtual cancer care in the future? Beyond the pandemic

The current focus is to continue to provide quality care to patients with cancer while adhering to public health measures amid the COVID-19 pandemic. The measures to control the COVID-19 outbreak will likely remain a feature of clinical care until a suitable vaccine or treatment is found. Even in the throes of this pandemic, it is recognised that not all consultations can or should be virtual. This is also true beyond the pandemic. To design and build effective and resilient virtual cancer care (VCC) delivery models, it will be necessary to determine who is appropriate for face-to-face care. It has been suggested that one approach is to develop a triage framework that is designed to encompass patient characteristics, cancer features, and treatment-related details[149][268]. These variables can be used to decide whether VCC or in-person assessment is appropriate.

Furthermore, a new VCC model could be used to better integrate the MDT with the wider clinical team such as pathology[209], as well as to primary care in a more efficient and timely manner. Virtual technologies have also helped widen collaborations across the world, in particular for challenging cancer cases[269]. This could continue post-pandemic.

If VCC is to continue, we need to ensure that data is collected about its use during the pandemic from patient, caregiver, and provider perspectives. Data can then be used to better understand how the rapid adoption of virtual care affects clinical and patient-valued outcomes and to guide the further development of digital tools. Ultimately, the objective will be to use these data to generate formal guidelines for use of virtual solutions in cancer care. It is important to include patient voices in the development of VCC in this new post-pandemic era. We need to support how patients and caregivers learn to use these platforms, including education on how to download, set up, and use new software. Careful attention will be required for those patients with different technologic literacy, such as non-English speakers, and those who are intimidated by the technologic leap, to ensure that no patients (or indeed clinicians) are left behind.

COVID-19 has challenged the global population in ways we could not possibly have imagined. In the short term, the focus of providers of cancer services is on minimising risk and keeping patients, wherever possible, out of harm's way. In the longer term, lessons learned during the pandemic could be used to find more efficient ways to deliver the best care possible to patients, which may involve appropriate use of innovative virtual technologies. What started with adversity can evolve into great opportunity.

4.0.6   Limitations of this review

The literature covering cancer care prior to the pandemic is extensive, and the sources considered for this review should be noted as a convenience sample of the available literature published 2015-2020, due to the magnitude of available research. Despite multiple searches utilising combinations of search terms on various platforms, data saturation was not reached, which infers that not all available studies were captured within the timescale available for this review. Furthermore, the pandemic represents a fast-moving situation and additional papers relevant specifically to virtual solutions for cancer care may have been published after the completion of the literature searches in mid-August.

The studies reviewed demonstrated a significant heterogeneity in design, included populations and interventions and outcomes measured. In addition, many publications post pandemic are descriptive with little evaluative content. There was also an evident lack of consistency in terminology of how digital solutions were defined adding to the challenge in interpreting the literature. Whilst some consistent findings emerged from the literature, it is acknowledged that the overall quality of included studies varied widely and was generally low to moderate.

This review has been limited to technologies/approaches that could be used as alternatives to face-to-face consultations. Digital health is much wider than this aspect of telehealth and organisers. Commissioners of services may want to consider evidence from other areas of digital health and cancer, including mHealth, technologies for monitoring clinical and patient-reported outcomes, cancer tele-genetics, bundling of cancer-related tele-applications and remote chemotherapy supervision[267]

5. Conclusion

There is consistent evidence from research that virtual cancer care demonstrates at least equivalency to face-to-face care, with high levels of patient and health professional satisfaction. However, the heterogeneity of populations and their specific characteristics, interventions and outcomes measured in included studies means that the questions of which telehealth approaches are best suited to which specific populations at which stage of the treatment pathway, or that could benefit from integration with primary care telehealth approaches, remain unanswered. It is likely that this is highly situation-dependent.

There is no "one-size fits all" approach to alternatives to face-to-face consultations and ultimately patients' perceptions and views are dependent on individual personalities and preferences. Personal context should be recognised as an important determinant of intervention acceptability. Whilst some appreciate and value the normality of being at home in familiar surroundings and not in an environment that reminds them of traumatic events, others miss contact with other patients and the hospital environment, which they find reassuring. A small proportion of patients find telephone consultations to be impersonal compared with face-to-face consultations. However, this review has shown that the swift adoption of approaches for virtual consultations, allowing home-based care, and remote patient monitoring can allow those treating cancers to maintain care while mitigating the risk of SARS-COV-2 infection. These approaches can be utilised across the whole patient pathway to reduce the care burden as well as decrease exposure risk for patients and health care teams.

The creation of a quality-based, sustainable, and patient-centric virtual cancer care model will require collaboration among the multiple disciplines that provide care to patients with cancer. For now, COVID-19 pandemic is still prevalent, and the current surge in telehealth use will need to evolve into a sustainable long-term model. It has been suggested that a return to previous levels of in-person care is unlikely.

Appendices

Appendix 1 – Online guidance from professional bodies for cancer care during the COVID-19 pandemic

Professional Body	Title	Summary	Date Published	Link
Association of Cancer Physicians	COVID-19 Resources	'To assist clinicians facing the current and significant challenges providing systemic therapies to cancer patients, the ACP is collating links to key relevant documents for medical oncologists.'	2020 (various)	https://www.theacp.org.uk/resources/COVID-19
British Association of Dermatologists	COVID-19: Clinical guidelines for the management of dermatology patients remotely	This guidance should be used to help dermatology units maintain urgent services, optimise use of medical staff, minimise additional work for GPs, and provide continuity of care with virtual patient management where possible.	17 June 2020	https://www.bad.org.uk/healthcare-professionals/COVID-19/remote-dermatology-guidance
British Association of Dermatologists & British Society for Dermatological Surgery	Guidance for recommencing skin cancer surgery services during the coronavirus pandemic	'This guidance is intended to aid in the development of a consensus approach regarding regional and local approaches to treatment.'	09 June 2020	https://www.bad.org.uk/shared/get-file.ashx?itemtype=document&id=6728
British Association of Head and Neck Oncologists	BAHNO Statement on COVID-19	'Initial guidance for head and neck cancer management during COVID-19 pandemic in consultation with ENT UK. BAOMS endorsement awaited.'	17 March 2020	https://www.bahno.org.uk/bahno_statement_on_COVID-19.aspx
British Association of Urology Surgeons	Coronavirus & COVID-19	Website providing information to both urologists and other carers, as well as patients and their families on the topic of COVID-19.	2020 (various)	https://www.baus.org.uk/about/coronavirus_COVID-19.aspx
British Gynaecological Cancer Society	BGCS framework for care of patients with gynaecological cancer during the COVID-19 Pandemic	'This framework is intended to aid decision-making by Gynaecological Cancer Centre clinicians and Cancer Unit clinicians and NHS Trusts, in the event that the facility for cancer services is compromised due to a combination of factors, including staff sickness, lack of theatre availability and supply chain shortages among others.'	05 May 2020	https://www.bgcs.org.uk/wp-content/uploads/2020/05/BGCS-guidance-v-3-final_-1.pdf
British Medical Association	COVID-19: video consultations and homeworking	'Advice for doctors in all settings in getting homeworking equipment, when to consult patients via video, approved NHS tools for remote consultations and tips for running them.'	03 June 2020	https://www.bma.org.uk/advice-and-support/COVID-19/adapting-to-COVID/COVID-19-video-consultations-and-homeworking

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Professional Body	Title	Summary	Date Published	Link
British Neuro-oncology Society and Society of British Neurological Surgeons	Adult neuro-oncology service provision during COVID-19 outbreak	'This document provides a framework for how to implement the measures locally. It is important to clearly document the rationale for all clinical decisions made.'	19 March 2020	https://www.bnos.org.uk/wp-content/uploads/2020/03/Adult-neuro-oncology-service-provision-during-COVID-outbreak_SBNS-BNOS.pdf
British Society for Haematology	COVID-19 Updates	'We aim to provide members with both general and haematology specific up-to-date COVID-19 information. This advice is for healthcare professionals.'	23 August 2020 (latest update)	https://b-s-h.org.uk/about-us/news/COVID-19-updates/
British Society of Gastroenterology	Joint ACPGBI, BSG and BSGAR considerations for adapting the rapid access colorectal cancer pathway during COVID-19 pandemic	'During the COVID-19 pandemic, rapid access two week wait colorectal cancer referrals will continue. Changes to our usual methods of managing these patients will have to be made'	10 April 2020	https://www.bsg.org.uk/COVID-19-advice/COVID-19-advice-for-healthcare-professionals/joint-acgbbi-bsg-and-bsgar-considerations-for-adapting-the-rapid-access-colorectoral-cancer-pathway-during-COVID-19-pandemic/
British Thoracic Society	Lung cancer and mesothelioma service guidance during the COVID-19 pandemic	'The purpose of this updated guidance is to provide assistance to cancer teams as they move towards full restoration of services, including compliance with the currently commissioned National Optimal Lung Cancer Pathway, whilst maintaining a favourable risk to benefit ratio.'	15 July 2020	https://www.brit-thoracic.org.uk/document-library/quality-improvement/COVID-19/lung-cancer-pathway-guidance-COVID-19/
Ear, Nose and Throat (ENT) UK	Remote triaging of urgent suspected head and neck cancer referrals during COVID-19 pandemic	Guidance for remote triaging of urgent suspected head and neck cancer referrals during the COVID-19 pandemic based on NHS guidance for managing cancer referrals.		https://www.entuk.org/sites/default/files/files/ENTUK_2WW_Telephone_Triage_Letter.pdf
European Society for Medical Oncology	Site-specific Cancer Patient Management During the COVID-19 Pandemic	'These recommendations should be used as guidance for prioritising the various aspects of cancer care in order to mitigate the negative effects of the COVID-19 pandemic on the management of cancer patients.'	08 April 2020	https://www.esmo.org/guidelines/cancer-patient-management-during-the-COVID-19-pandemic
General Medical Council	Coronavirus: Your frequently asked questions	There is a specific section on providing remote consultations during this time.	Not specified	https://www.gmc-uk.org/ethical-guidance/ethical-hub/COVID-19-questions-and-answers#Remote-consultations
Royal College of General Practitioners	Remote consultation and triaging	'Advice on adapting to changing consultation formats, including best practice for online and telephone triage appointments.'	01 July 2020 (last modified)	https://elearning.rcgp.org.uk/mod/page/view.php?id=10551#RCGP
Royal College of Nursing	Remote consultations guidance under COVID-19 restrictions	'This guidance has been developed to support nursing staff, including health visitors, midwives and nursing support workers, where they are being asked to see and/or treat patients via a telephone or video or other remote consultation process.'	04 May 2020	https://www.rcn.org.uk/professional-development/publications/rcn-remote-consultations-guidance-under-COVID-19-restrictions-pub-009256

Professional Body	Title	Summary	Date Published	Link
Royal College of Surgeons	Tool 4: Virtual consultations — Royal College of Surgeons	'This guide provides practical advice for surgeons and managers for delivering virtual consultations with surgical patients.'	30 June 2020	https://www.rcseng.ac.uk/coronavirus/recovery-of-surgical-services/tool-4/
The Association for Cancer Surgery (BASO)	BASO Guidance on COVID-19	Guidance from BASO on 'Cancer Surgery in COVID-19 Pandemic' and 'Pragmatic Management of Breast Cancer During COVID-19'	2020 (various)	https://baso.org.uk/news/baso-guidance-on-COVID-19.aspx
The Society of Surgical Oncology	Disease-site specific resources to help guide decisions in the era of COVID-19, as well as a series of podcasts from different specialists	'This list is a compiled set of resources from multiple references.'	23 June 2020 (latest update)	https://www.surgonc.org/resources/COVID-19-resources/

The societies below were also searched but resources could not be found that were available publicly or of relevance to the topic:

British Orthopaedic Oncology Society

British Sarcoma Group

Royal College of Physicians

UK Breast Cancer Group

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Appendix 2 – Selection of online resources and training for clinicians on remote consultations

Organisation	Title	Summary	Date Published	Link
e-Learning for Healthcare	Training Resources	Various training resources on remote consultations for clinicians	Various	https://portal.e-lfh.org.uk/Catalogue/Index?HierarchyId=0_45016_45125_45728_46389&programmeId=45016
General Medical Council	Remote consultations	'Doctors are being asked to triage and treat patients by remote consultations where possible to protect staff and patients from infection of COVID 19.'	Not specified	https://www.gmc-uk.org/ethical-guidance/ethical-hub/remote-consultations
Macmillan	Cancer and coronavirus resources for healthcare professionals	'Resources to help health and social care professionals find relevant guidance around coronavirus, cancer treatments and its management.'	Not specified	https://www.macmillan.org.uk/coronavirus/healthcare-professionals/guidance-and-resources
National Voices	The Dr Will Zoom You Now: getting the most out of the virtual health and care experience	'The Doctor Will Zoom You Now was a rapid, qualitative research study designed to understand the patient experience of remote and virtual consultations.'	24 July 2020	https://www.youtube.com/watch?v=UXqYHyMXQ-w https://www.nationalvoices.org.uk/publications/our-publications/dr-will-zoom-you-now-getting-most-out-virtual-health-and-care
NHS Arden and Greater East Midlands CSU	Video / online consultations - Support tools	Resources to support clinicians with online consultations	29 May 2020	https://ka-for-ardengemcsu.blogspot.com/2020/03/video-online-consultations.html
NHS Education for Scotland	Remote Consultation Skills	'The General Practice Nursing (GPN) and CPD Connect teams have produced three webinars to support GPNs during the COVID-19 pandemic.'	28 April 2020	https://www.nes.scot.nhs.uk/newsroom/features-and-articles/remote-consultation-skills.aspx
NHS England	Using phone consultations	'Use of the telephone for consulting with patients has been growing for several years. Used appropriately it appears safe and popular with patients. It also offers the potential to release GP time, providing the practice considers all the changes required.'	Not specified	https://www.england.nhs.uk/wp-content/uploads/2016/03/releas-capcty-case-study-2-183.pdf
nhsnetworks	Video consultations – new resources	'To support primary care in delivering video consultations, two new resources have been published.'	No specified	https://www.networks.nhs.uk/networks/news/video-consultations-2013-new-resources
Primary Care Pathways	COVID-19 Resource Centre	A range of resources collated in relation to COVID-19, including remote consultations.	Not specified	https://primarycarepathways.co.uk/COVID19
UCL Partners	How-to guide: non face-to-face clinics	'This website includes a range of resources aimed at supporting colleagues / partners in the planning and implementation of non-face-to-face models of care.'	Not specified	https://uclpartners.com/non-face-to-face-clinics-resource/

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Organisation	Title	Summary	Date Published	Link
University of Oxford	VIDEO CONSULTATIONS: A GUIDE FOR PRACTICE	'The document covers five key topics. When are video consultations appropriate, how can a practice get ready for them, how can clinicians conduct high-quality video consultations, what can patients do to prepare for and take part in them, and what is the research evidence for their quality and safety?'	18 March 2020	https://bjgplife.com/2020/03/18/video-consultations-guide-for-practice/
Breaking Bad News				
British Medical Journal	How can I break bad news remotely?	'Because of the COVID-19 pandemic more doctors than ever are consulting with patients remotely. Doctors share their advice on remote consultations'	30 April 2020	https://www.bmj.com/bmj/section-pdf/1027792?path=/bmj/369/8246/Careers.full.pdf https://www.bmj.com/content/369/bmj.m1746
Healthcare Information For All	Coronavirus (650) How can I break bad news remotely?	'This article may be useful for those who are unable to see patients physically during the coronavirus pandemic.'	22 May 2020	http://www.hifa.org/dgroups-rss/coronavirus-650-how-can-i-break-bad-news-remotely
Med Page Today	The Serious Conversation: Delivering Bad News by Telemedicine	'As office visits move online, clinicians discuss breaking life-changing diagnoses virtually'	13 July 2020	https://www.medpagetoday.com/practicemanagement/telehealth/87532
Medscape	Delivering Bad News: Is There a Wrong Way to Do It?	Details of where delivering bad news and the ways that have not been deemed to work as well as others.	22 April 2020	https://www.medscape.com/viewarticle/911888
Real Talk	COVID-19: Evidence-based advice for difficult conversations	'The evidence comes from research on thousands of difficult conversations recorded across various health and social care settings in the UK, Australia, and the US.'	23 March 2020	https://www.realtalktraining.co.uk/COVID19-evidence-based-advice-difficult-conversations
e-Learning for Healthcare	Training Resources	Various training resources on breaking bad news remotely for clinicians	Various	https://portal.e-lfh.org.uk/Catalogue/Index?HierarchyId=0_45016_45125_45728_46389&programmeId=45016
University of Oxford	Video consulting in the NHS	'These accessible guides and resources are available to anyone considering using video technology as part of an NHS consultation. They are designed to be relevant to any technology or clinical setting.'	Not specified	https://www.phc.ox.ac.uk/research/resources/video-consulting-in-the-nhs

Appendix 3 - Case studies not reported in Academic Literature

Remote consultations transform how patients access Oxford University Hospital care[220]

An article on the hospital website reports how increased use of video consultations across the hospital has allowed patients to continue accessing specialist services during the COVID-19 lockdown. Before the pandemic, very few departments used technology to conduct remote consultations with patients, but 4,267 such consultations were carried out March – May 2020 using the Attend Anywhere (AA) platform. In the week of 18 May 2020, there were 882 video appointments including those for cancer patients.

Boots offer cancer patients free online video pharmacy consultations[221]

Boots, in partnership with Macmillan Cancer Support, has more than 2,000-trained Boots Macmillan Information Pharmacists (BMIPs). Boots has worked with digital healthcare provider Livi, to make their service of specialist information and support on cancer, its treatment and possible side effects available digitally and free of charge.

Videoconferencing can benefit the NHS and patients long after coronavirus[222]

The medical director of St Helens and Knowsley Teaching Hospitals NHS Trust (STHK) describes the benefits of offering video consultations. Video consultation technology provided by Refero had already been successfully trialled for 2 years pre-pandemic with the Cancer Drains Outreach Services. The pilot allowed patients to become digitally connected with clinicians and enabled continual engagement via video consultation and messaging through a web portal, smartphone or tablet. STHK is currently looking at setting up clinics that have an initial face-to-face consultation, followed by two telehealth consultations, leading to another face-to-face, so that they can stagger those people physically coming into hospital.

Appendix 4 - Notes on Limitations of the Review

The studies reviewed demonstrated a significant heterogeneity in design, included populations and interventions, as well as outcomes measured. Systematic reviews with meta-analysis, which conflated studies evaluating multiple interventions (telephone, online, video etc.) without considering them in sub-group analyses, were excluded from this review for this reason, especially if tests for heterogeneity had not been performed. Different ways in which digital solutions were defined between studies proved problematic and it is obvious that there is no universal, clear consensus about what the various terms mean. For instance, "telehealth" in one paper could be exclusively videoconferencing, whereas to other researchers, the term encompasses multiple digital technologies. "Virtual" sometimes means video, other times it includes other methods of communication.

The quality of studies in this review varied widely but was generally low to moderate. All included RCTs should be considered pragmatic due to lack of blinding. However, despite the biases introduced by failure to blind, this could be considered a strength. Pragmatic trials are designed to evaluate the effectiveness of interventions in real-life routine practice conditions, whereas explanatory trials aim to test whether an intervention works under optimal situations.

Most RCTs included in this review were adequately powered, having sufficient sample size to detect any differences between groups. Although some studies had a high dropout rates, intention to treat analysis was appropriately used in most cases. Smaller samples sizes were evident in "pilot" or "feasibility" studies. Most of the RCTs had short follow-up duration thus longer-term impact on measured outcomes is unclear. Participants in all studies were often self-selected, raising the possibility of selection bias. Methods used to evaluate very subjective outcomes such as convenience, acceptability and satisfaction (for both patients and clinicians) often involved short quantitative questionnaires, which were not necessarily standardised or validated limiting the ability to compare studies examining these outcomes. Studies using closed-question or a priori designed questionnaires are deemed to be of lower quality due to the potential lack of opportunity for patient-centred perceptions to spontaneously emerge as would in unstructured patient interviews. Studies published since the start of the pandemic are often non-peer-reviewed, due to the need to get evidence out into the scientific community as quickly as possible.

This review has relied heavily on observational studies (a significant proportion of which were retrospective), including cross-sectional studies or case series, the possibility of publication bias cannot be ruled out. Studies utilising these methodologies with negative findings are far less likely to be published than those showing positive findings.

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