Cancerworld

Telemedicine in Cancer Care: Monitoring, Follow-Up,Tele-Rehabilitation, Palliative and Supportive Care

Adriana Albini / 23 January 2023

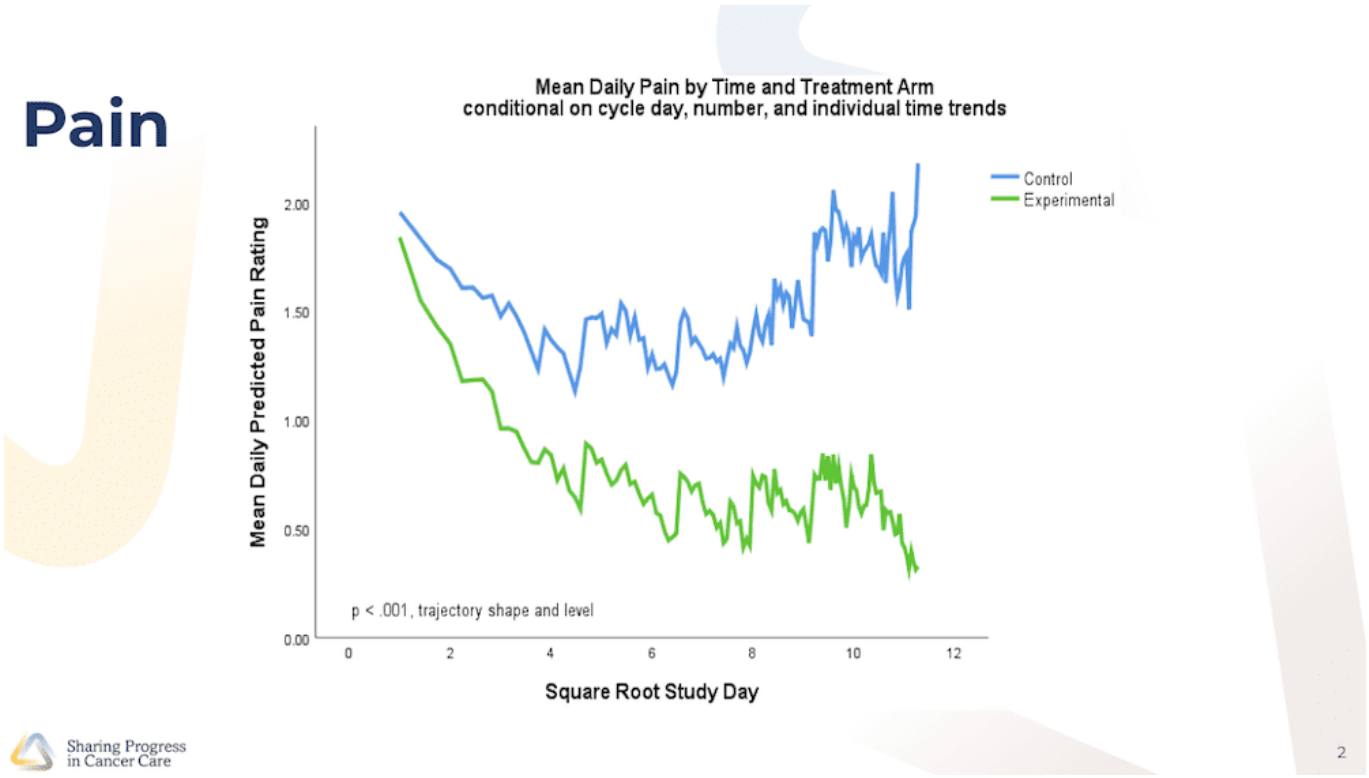
This webinar took place on 6th December 2022 as part of the Telemedicine Project Phase 2, developed by SPCC in collaboration with the American Society of Clinical Oncology (ASCO). The session was chaired by a frequent speaker at the SPCC webinars on telemedicine, Florian Scotté, Medical Oncologist at the Institute Gustave Roussy, Villejuif, France.

Technology-aided Approaches to Address Cancer and Treatment-Related Symptoms at Home

Kathi Mooney is Distinguished Professor at the University of Utah College of Nursing and holds the Louis S. Peery and Janet B. Peery Presidential Endowed Chair in Nursing. She is co-leader of the Cancer Control and Population Sciences Program at the Huntsman Cancer Institute. Her presentation focussed on the utilisation of technology to address cancer symptom management. Technology, as a means to collect patient reported outcome data, has been around for over 20 years. In the beginning, it was used as an efficient way to collect symptom reports at clinic visits or as a population-based outcome metric. These initial applications have now extended to remote monitoring of patients at home. Multiple randomised controlled trials have demonstrated that remote symptom monitoring can reduce symptom burden and unplanned healthcare, and, potentially, extend survival. The mechanism for improved survival is yet to be determined but could be related to better adherence to and tolerance of treatments, or to a more rapid response to symptoms. There is increasing interest in providing cancer care and supportive care at home. The Covid-19 pandemic has reinforced the notion that the best place for a patient is at home, and many

symptoms treated in the hospital can be safely managed at home. In the US, cancer care at home, other than home hospice service, is still uncommon, mainly because there are limited payment models. However, hospital beds and emergency departments are taxed, and studies demonstrate the safety, benefit, and cost-reduction of home-based care. Cancer patients receive the bulk of their care as outpatients, therefore experience symptoms at home. They must understand how to evaluate them as they occur, what self-management they can do and when to seek further care. This is more complicated than clinicians have so far appreciated. Patients often wait too long and end up with acute episodes and unplanned health care utilisation, that could have been avoided with better monitoring and follow-up. To break this cycle, symptoms need to be proactively monitored, and an automated approach is necessary in order to make this feasible. Such system should provide ongoing, frequent, systematic, proactive assessment, give self-management coaching relevant to the symptoms experienced by the patient, and also bring poorly controlled symptoms to the attention of oncology providers without requiring the patient or caregiver to initiate action.

Technology is the delivery mode, not the intervention. To reduce symptoms, we must have an effective intervention. Technology is still important, obviously, and platforms must be developed with users in mind, patients, family caregivers, oncology providers. When guided by these principles, technology-aided interventions can overcome current barriers to advances in symptom care. Patient symptoms occur at home, not during clinic visits, therefore we need to extend active care to the home. Technology is the way to make this possible, and it allows us to provide patient monitoring and real-time responsiveness to symptoms for a larger group of patients. These electronic platforms can engage patients and improve communication between providers who are at the healthcare facilities and their patients at home. A common assumption is that older patients will not engage with technology, but this does not necessarily hold true, and all sub-groups can benefit with the right adaptations. Unfortunately, many apps are being developed for a single symptom, with the risk of overwhelming the user. Patients do not have single symptoms, what they need is technology-aided comprehensive symptom care.



Symptom Care at Home (SCH) is a multi-component symptom monitoring and management system. It was developed by Prof. Mooney's team and tested for over 20 years. It monitors daily patient-reported symptoms using a telephone-based interactive voice response (IVR) system, which

does not require a smartphone or internet. For those patients who prefer it, though, there are also an app and web-based options. The SCH assesses the 11 most common symptoms in cancer treatment and can be customised for other ones as well. The patient reports their symptoms, which are immediately analysed by SCH for type and severity, and an automated self-management coaching is sent out to the patient. This is a huge improvement over traditional approaches of attending chemo classes or being given a notebook of self-management strategies at the time when the cancer patient has yet to begin treatment and experience symptoms. The SCH system also notifies a designated nurse practitioner in the case of moderate to severe symptoms. This stepped approach allows oncology providers to maintain close contact with patients when they are at home and provide the appropriate level of support. The results of a randomised controlled trial showed a remarkable reduction of 43% in symptoms over usual care. Prof. Mooney's team also wanted to find out whether SCH could deliver interventions that require behavioural engagement, such as physical activity. When patients reported fatigue, nausea or anxiety, symptoms that may improve with exercise, they were offered to start an exercise programme tailored to their needs. The study's aim was to determine if patients would respond to an automated suggestion and if any benefits would appear in their symptom profile. The simple automated intervention resulted in uptake by 60% of patients and it did reduce the symptoms for which it was triggered. Another study was conducted to test an automated monitoring and coaching system for family caregivers during home hospice.

Beside patient care coaching, caregivers were coached about their own wellbeing. SCH monitored caregiver sleep, fatigue, and degree of interference with normal activities, as well as psychosocial symptoms of anxiety and depression. The combination of all the components of SCH produced synergy not found from individual components. SCH patients experienced significantly lower total symptom severity compared to usual hospice care, and overall well-being was significantly better in SCH caregivers.

It is important that we determine the most effective way to integrate automated symptom monitoring and management into the current oncology workflow. A key question is whether provider symptom notifications are better handled by the primary oncology team or by a virtual symptom care centre focussed on remote monitoring and improvement of symptoms at home. Much can still be done to develop and deliver symptom management coaching that is most effective for individual patients. It should involve sequential approaches, with higher level interventions for those whose symptoms continue. Stepped approaches to symptom care are easily sequenced by technology-aided interventions and are likely to yield better outcomes than a one-size-fits-all approach. In the future, as passive sensor technology matures, there will be the opportunity to integrate them with patient experiences, for example to detect much earlier signs of infection, or to identify increasing stress in a family caregiver, and so, intervene earlier.

Telerehabilitation in Cancer Care

Marcalee Sipski Alexander is Clinical Professor, University of Alabama at Birmingham School of Medicine, Birmingham, US. She is also President of Sustain Our Abilities and Editor of Telerehabilitation, Principles & Practice. The number of cancer survivors and the relative survival rates are increasing due to population aging, advances in treatment and improvements in screening and detection. Cancer survivors may have functional impairments, depending on the disease burden, type, location, and on treatment toxicity. Long-term functional deficits, functional decline and psychological concerns can have a negative impact on quality of life. About one-fifth of the elderly on chemotherapy experience a decline in activities of daily living (ADL), such as eating, dressing, mobility. Also, the decline in functioning in people with advanced cancer in their final year of life is much steeper than in other illnesses. Using remote monitoring and web-based exercises in a collaborative fashion can help improve overall functional capacity and minimise decline. These interventions have been tried in advanced cancer and in chemotherapy patients with positive results. Functional improvements have been shown to be maintained months after programme completion. Care at home is a much more realistic environment than the clinic. Performing therapies at home allows for more accurate assessments of barriers to ADL care and equipment needs.

According to Daniel Carr and his team, the most common symptoms after cancer treatment are pain, fatigue, and depression. Comprehensive multidisciplinary assessments have resulted in decreased pain and depression scores, and automated symptom monitoring in conjunction with remote support has been shown to reduce symptom burden and outcomes for patients undergoing chemotherapy. **Can telerehabilitation improve quality of life?** In breast cancer, a large number of patients have been studied. The use of telehealth interventions has meant improved quality of life and self-efficacy, and less depression and stress than usual care. This also applies to head and neck cancer patients, who have needs for speech therapy as a result of surgical procedures. In a recent meta-analysis of 1127 patients with breast cancer, conducted by Yueyang Peng et al., telehealth was found to have a significantly positive effect on physical activity, aerobic capacity, muscular strength, fatigue, and quality of life. Traditional face-to-face exercise interventions, in hospitals or gyms or with private instructors, may reduce long-term adherence, due to time, travel and financial considerations. The

Collaborative Care to Improve Performance in Cancer (COPE) study was a 3-arm randomised trial at three academic medical centres within 1 health care system. The 516 participants (men and women evenly distributed) were low-level community or household ambulators with stage IIIC or IV solid or hematologic cancer. The subjects were randomly assigned to control, telerehabilitation or telerehabilitation plus nurse-led pharmacological pain management (PPM). The results showed that the telerehabilitation group in and of itself, had improved function and quality of life as compared to the control group. Collaborative telerehabilitation, both with and without PPM, had reduced pain interference and intensity, while decreasing hospital length of stay and the requirement for post-acute care. Interestingly, the outcomes were not enhanced with the addition of pharmacological pain management.

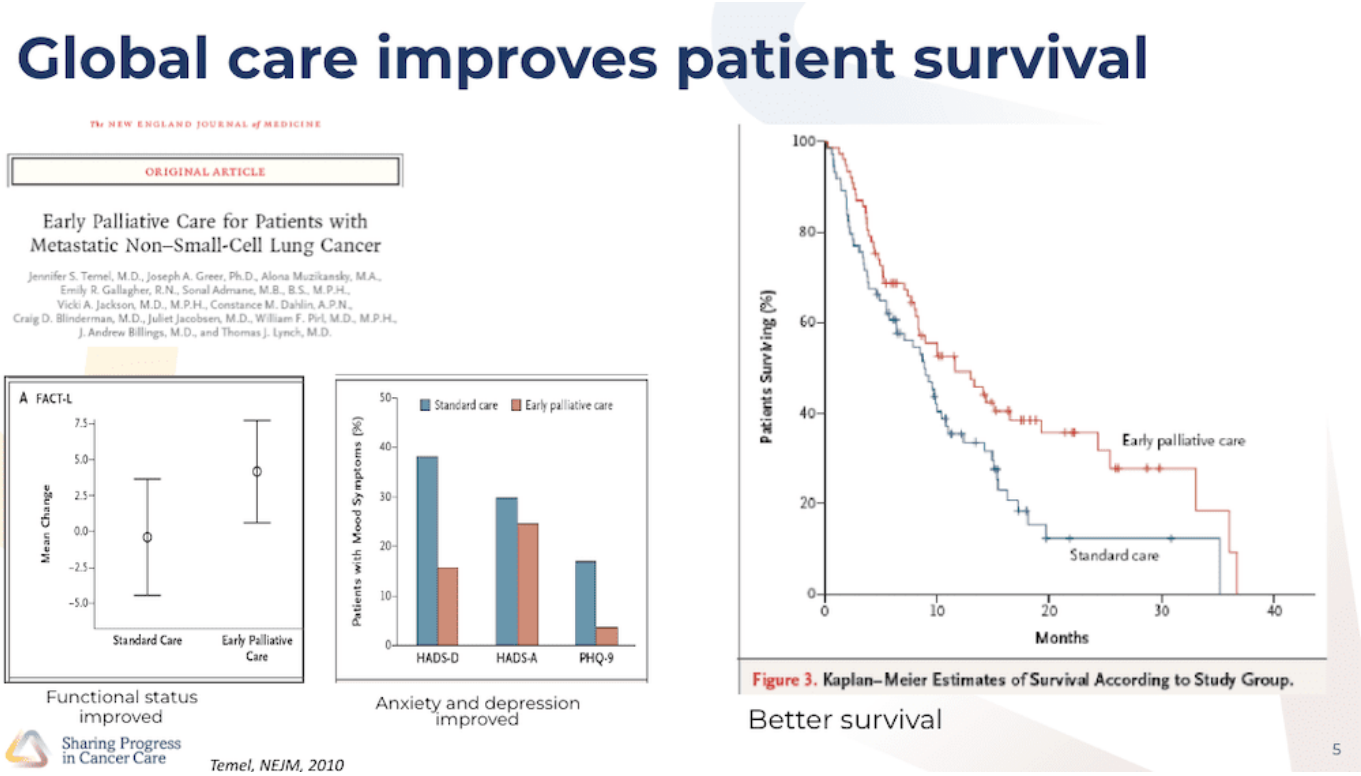
What does telerehabilitation involve and how can it be integrated throughout the cancer care continuum? Following the framework developed by Chanel Davidoff and Susan Maltser, at the time of diagnosis there should be an assessment of physical and cognitive impairment, baseline function, home environment, patient and family expectations, patient support, therapy needs, and, of course, an Exercise Risk Assessment. Interdisciplinary care can include virtual tumour boards, and referral to remote clinical trials. Education-wise, pre-op and post-op care, disease specific education and education about potential adverse events should be included. From the therapy standpoint, we may do a cardiac risk assessment for exercise, establish baseline activity levels, address activity restrictions, refer to pre-habilitation, if indicated, and determine the level of supervision. Going on to active treatment, we need remote symptom monitoring, and monitoring for adverse effects and functional decline, we should also discuss weight and nutrition management. Therapy would be web-based exercises, if applicable, adjusted to tolerability, and the programme should be monitored for adherence. There needs to be ongoing communication with primary providers, especially with regards to restrictions in exercise and functional status. Finally, in terms of survivorship, as we know, the number of cancer survivors is increasing around the world. There needs to be long-term monitoring of impairments, return to work evaluation, referral to palliative care if applicable; we must address new or uncontrolled symptoms and screen for functional changes. Patients should be advised on potential long-term consequences of treatment. As for therapy, necessary adaptive equipment and transition to a home-based exercise programme should be provided, if appropriate. Of course, disease surveillance should continue, and palliative interventions prescribed, when necessary.

Research and development for cancer telerehabilitation in the future should include: evaluating utility in specific cancers (breast cancer is well-studied, but what about other types of cancer?); incorporating inpatient care with seamless follow-up assessments; incorporating virtual rehabilitation therapies routinely as part of oncological care; assessing quality of life of the patient’s family members; evaluating cost effectiveness of telerehabilitation in cancer care. Finally, for the bigger picture, we should also consider evaluating carbon outputs of telerehabilitation versus usual care.

Telemedicine in Cancer Care: Palliative and Supportive Care

Mario Di Palma is Medical Oncologist at Gustave Roussy Cancer Campus, Villejuif, France. He is also co-president of Onco94 Ouest, as well as of AFSOS, the French speaking association for supportive care in oncology. Dr. Di Palma initiated the CAPRI study, which demonstrated the beneficial impact of remote monitoring combining a web platform and nurse navigators for patients treated with oral anticancer agents. **The landscape of oncology has changed**. There are more and more patients under treatment, patients diagnosed with localised cancer, who will need adjuvant therapy, and there is improved survival for patients with non-curable diseases. We are also seeing a shift to ambulatory care, thanks to supportive care, and are now moving to home care with

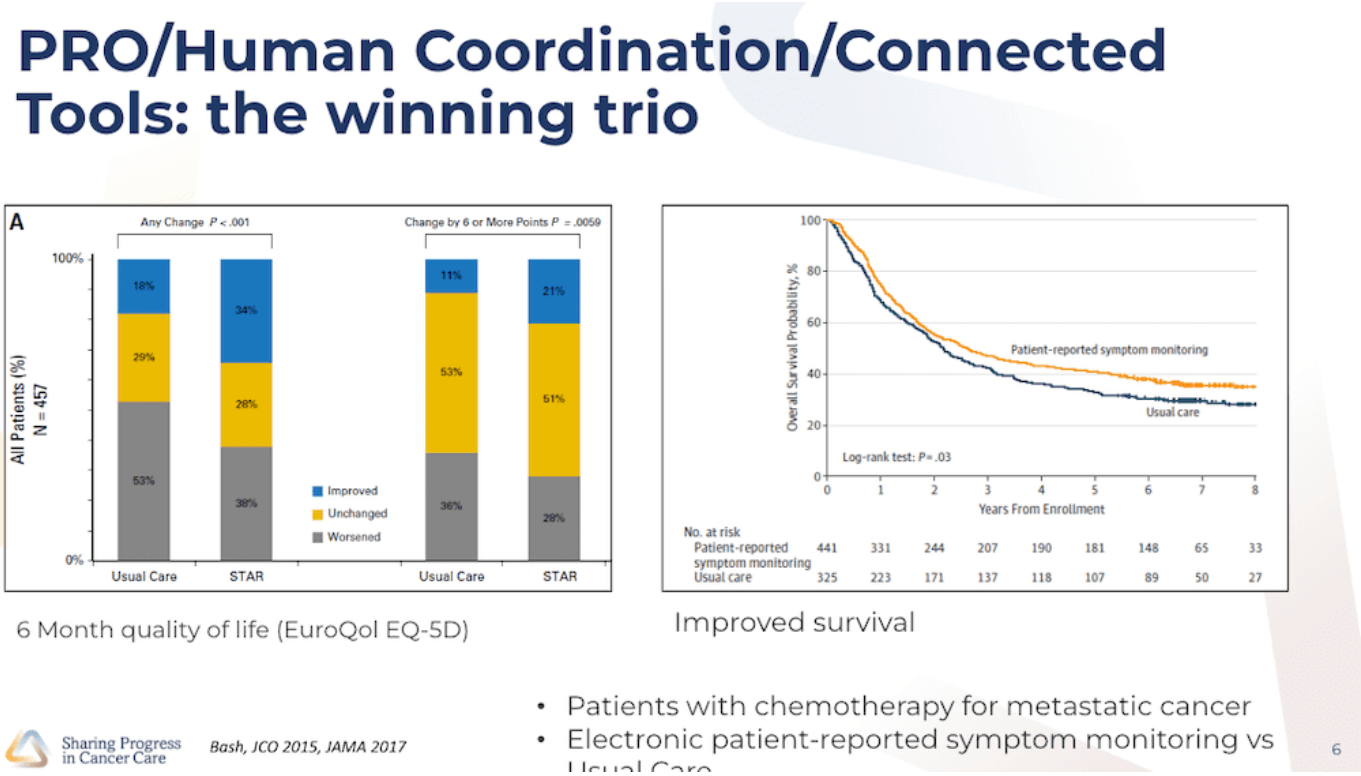
the development of oral treatment. Patients are spending less time in the hospital; therefore, we need long-term follow-up, and to include survival care in our organisation. Access to innovative treatment has become much more rapid, and there is also targeted treatment, thanks to the progress in biotechnology. We need high-level expertise for these new drugs, it must be accessible for all patients, and also for the caregivers outside the hospital. This drug expertise exists in the hospital, but patients are no longer in the hospital. We need a system that allows for real-time information shared with the patient and all their healthcare team. **This new scenario makes digital health mandatory for cancer patients.**



Supportive or palliative care? We tend to use the term palliative care for patients with advanced non-curable disease, who have relatively short survival expectations. Supportive care, on the other hand, is the prevention and management of adverse effects caused by the illness and its treatment, from diagnosis through to post-treatment care. Therefore, we can say that palliative care is part of supportive care, and it includes pain management, psychosocial and spiritual support, nutrition, physical activity, and so on. Since the seminal studies by Jennifer Temel, we know that global care, supportive or palliative, not only improves quality of life, anxiety, depression, but also, patient survival. In brief, **supportive care is not an option.**

It is well recognised that patient reported outcomes (PROs) contribute to a more accurate evaluation. When the patient reports a symptom, whether a subjective or objective one, we can form a better idea of the impact on their quality of life. Using remote electronic ways to get this information is an opportunity for supportive care, because it allows for real-time monitoring, longitudinal follow-up, and screening for toxicity. Data collection can be active, as in patient/caregiver intervention, or passive, through wearables, for instance. In another well-known study, by Ethan Basch and his group, patients receiving systemic treatment for metastatic cancer were invited to complete a weekly survey via web or automated telephone system. The results showed that, compared to usual care, systematic symptom monitoring using web-based patient-reported outcomes not only improves the patient's quality of life but also their survival. Similar outcomes were obtained by the CAPRI Trial. This was a randomised trial of adult patients on oral treatment for advanced or metastatic disease, carried out at Gustave Roussy and published in 2022. Researchers compared standard care with patient follow-up with nurse navigator, mobile

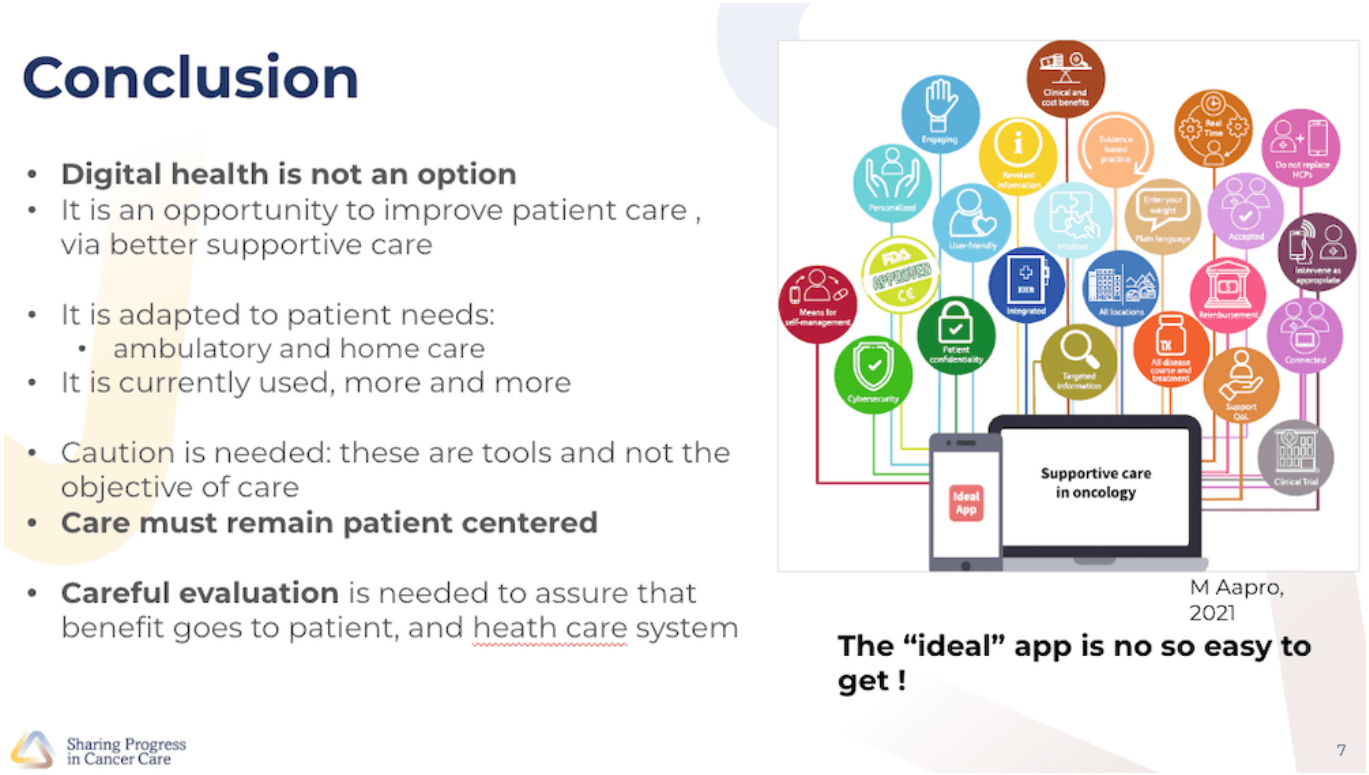
application, and dedicated website. It showed better dose intensity for the treatment and better patient adherence. Even more important, high-grade toxicity was lower in the CAPRI arm, less patients went to the emergency room or were hospitalised, and when they were, they remained a shorter time.



A review by Matti Aapro was published in 2021. It included 66 full-text articles and associated clinical trials, indicating that digital health is already part of supportive care for patients. Remote symptoms monitoring is very important, whether using ePRO and wearables, mobile apps, internet or phone, nurse navigators, or coordinator intervention. The symptom burden is less when patients are followed in this way, less distress, depression, fatigue, and better adherence to treatment have been observed. There are reduced ER admission and hospitalisation and a positive impact on healthcare resource utilisation. A systematic review and meta-analysis of electronic health interventions for patients with breast cancer was published by Anna Singleton et al. in 2022. Again, it indicated clear benefits for quality of life, distress, fatigue, and self-efficacy. It also showed that acceptability, satisfaction, and engagement were high for this kind of interventions. Another systematic meta-review, this time for digital health interventions in palliative care, found that most of them were delivered via videoconferencing, followed by electronic healthcare records and phone. The main purpose of the digital health interventions was for education, symptoms management and information provision or management. In a survey made in Australia and published in 2021 on palliative care providers' use of digital health, most of the 170 health practitioners who took part, reported already using a variety of digital health technology for patients with advanced disease at the hospital or at home.

MyPal is a Horizon 2020 European project, aiming to foster palliative care for adults and children with cancer by promoting the use of electronic PROs. The programme includes standardised questionnaires, the development of specialised applications and the evaluation of high-level clinical studies. Dr. di Palma showed a few examples of how these tools can work in practice. The first was a tool to control dyspnoea symptoms of patients in palliative care, a smart patch that can be worn by the patient at home or in the hospital. It can monitor many different parameters and it transmits real-time information to the nurse and physician, so the patient can receive at home the same kind of follow-up they get in hospital. Another example, published in 2022 by Jennifer Temel, is an ongoing

trial on patients with advanced lung cancer. The idea is to get access to trained health care professionals in palliative care, and it compares in-person versus video-based telehealth intervention. An ongoing trial in France is evaluating access to psychologists via the internet. The results of a randomised controlled trial of a novel artificial intelligence-based smartphone application to improve cancer-related pain were published in 2019. 112 patients with metastatic cancer-related pain were randomised to receive usual care or use a simple AI app. If the patient is fine, the information goes to the nurse; if the patient is experiencing a lot of pain, the nurse can give advice. Bu the app can also “discuss” with the patient, give limited advice, and ask if they have taken their medication. The outcome of this small trial showed pain reduction in the experimental arm. As Prof. Mooney already pointed out, digital health is not only for the patients themselves, but also for the caregivers. A prospective trial evaluated the use of the Comprehensive Health Enhancement Support System (CHESS), designed to help caregivers, versus usual care, which simply comprised of a list of internet resources about lung cancer. Caregivers in the CHESS arm consistently reported lower patient physical symptom distress than those in the internet arm.



Digital health could help us to detect toxicity but also to predict it. For now, it is almost impossible to prevent toxicity related to immunotherapy. However, a large database, which is only possible with ePROs and digital tools, can gather real-time information and be able with the aid of AI to define and identify predictive factors of immunotherapy toxicity. Quality of life is also an important goal. It is part of drug evaluation, and digital health can be very helpful in this. A trial was conducted comparing immunotherapy and chemotherapy in patients with metastatic lung cancer. It showed that not only these patients have better survival but also better symptom control and quality of life. In conclusion, digital health is no more an option, it is an opportunity to improve patient care, not only during treatment but also after, for survivor care. It adapts to patient needs, ambulatory or home care, and is now being used more and more. We should not forget, though, that these are tools and not the objective of care. The objective of care must remain patient-centred, we need to make sure that the benefits go to the patient and to the healthcare system.