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Prescreening for COVID-19 in patients receiving cancer treatment using a patient-reported outcome platform

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COVID-19 is an infectious pandemic disease caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) virus with varying presentations ranging from asymptomatic, sensation of a mild cold or influenza to severe bilateral pneumonia and death.[1] Patients with cancer and COVID-19 are at a significantly higher likelihood of poor disease outcomes.[2 3] In the absence of a vaccine or adequate treatment of COVID-19 current measures to minimise the infectious risk of SARS-CoV-2 in a cancer patient population are focused on physical distancing and protective measures. As it is clear that a hospital is a high-risk setting to contract COVID-19, one of the strategies we can use to treat patients with cancer as safe as possible is to reduce hospital visits to a strict minimum. We previously reported on AMTRA (ambulatory Monitoring of cancer Therapy using an interactive Application) which is a home-based monitoring, registration and interaction PRO (Patient Reported Outcomes) tool, developed in Belgium as an academic research project.[4] The platform, RemeCare Oncology, was initially developed as a home toxicity monitoring system for oral treatment, but later expanded to all anticancer treatments and linked to an interactive home blood sampling system. It proved to be effective and reliable and patients were highly satisfied using it[5] . Consenting patients are equipped with a PRO application (RemeCare app) for remote interactive monitoring of toxicities. During the present COVID-19 pandemic the system was used to maximise the home care of patients with cancer (COrona REmeCare Oncology). COVID-19-related complaints are routinely questioned by the AMTRA system (fever, muscular pain, cough, shortness of

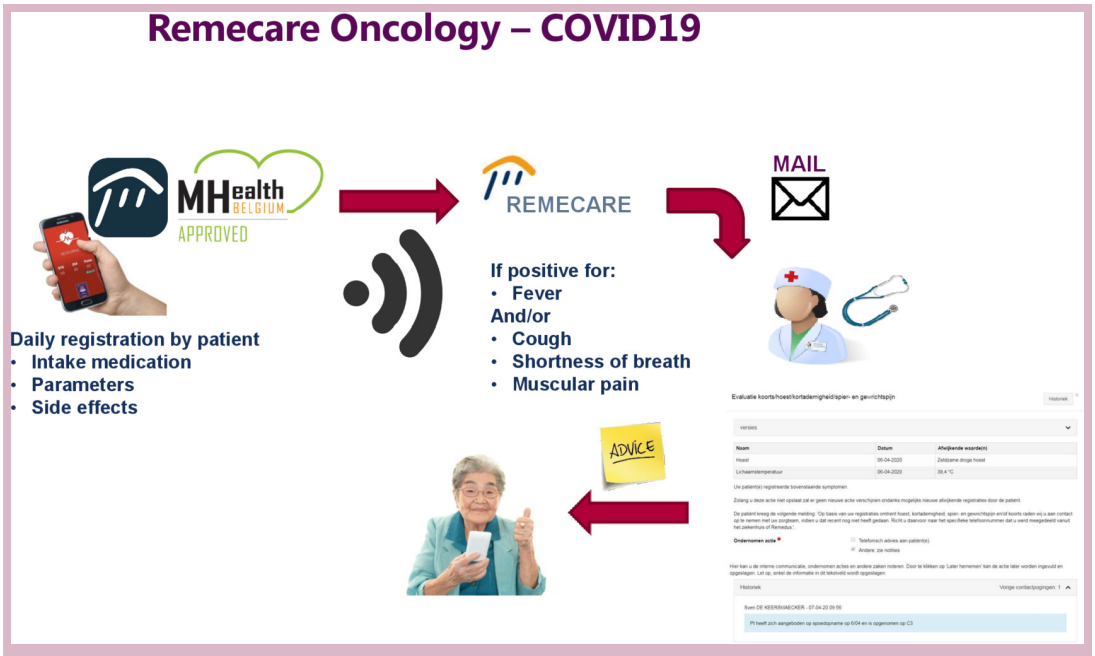

Figure 1 Flow of the RemeCare system.

Table 1 Characteristics of the patients with a COVID-19-related alarm included in the COREO project

Age	Gender	WHO	Tumour type	Date of diagnosis	Metastasis	Treatment		Alarm RemeCare	Test COVID-19	Result	Hospitalisation	Follow-up
							Date	Symptom				
66	M	2	Urothelial cancer	1 October 2015	Liver/peritoneal	Chemo: CarboTaxol once weekly	20 March 2020	T°39.2				Initially considered as tumour fever
							22 March 2020	T°38.2				
							23 March 2020	T°39.2	24 March 2020	Negative		Still hospitalised at present
							5 April 2020	T°38.7				
									15 April 2020	Positive	15 April 2020	
74	M	1	Glioblastoma	2 August 2018	None	Targeted: regorafenib	22 March 2020	Dyspnoea/cough/myalgia/T°38	Netherlands	Positive	23 March 2020	Home isolation
							1 April 2020	T°39.9	16 April 2020			
54	M	0	Nasopharyngeal carcinoma	12 November 2019	Bone/lung/pleura	Chemo: cisplatin/ gemcitabine	6 April 2020	Cough/T°39.4	6 April 2020	Positive	6 April 2020	Admitted to hospital, discharged 24 March 2020
							7 April 2020	T°39.4	21 April 2020	Positive		
62	M	1	Urothelial cancer	1 December 2019	Lung	Chemo: paclitaxel/ carboplatin	7 April 2020	Dyspnoea/cough/myalgia	Not tested			
							20 April 2020	T°38				Pharyngitis according to GP
												No symptoms at present
54	M	0	Rectal adenocarcinoma	4 October 2019	None	Chemo: CAPOX every 3 weeks	19 April 2020	T°38.2	5 April 2020	Negative		No retesting
												No symptoms at present

CAPOX, capecitabine plus oxaliplatin; COREO, COrona REmeCare Oncology; GP, general practitioner.

breath). Via an online connection the presence and severity (from grade 0 to 3) of toxicities are registered at any time and uploaded to a web-based central platform, stored in the patients' electronic medical record (figure 1). If the registered temperature is above 38.0°C or there is at least one symptom suspicious for COVID-19 the patient is asked to come to the hospital (emergency COVID-19 screening unit) for SARS-CoV-2 formal PCR testing on a nose/throat swab. This implicates that the App does not discriminate between COVID-19 and other causes of alarm such as neutropenic fever, bacterial infections, and so on. Over the last month we used this platform in 164 patients receiving systemic cancer treatment. A COVID-19 alarm was raised in five patients and in three of them a formal diagnosis of COVID-19 could be confirmed (table 1). One patient had a laryngitis according to his general practitioner and did not have a COVID test and one patient tested negative. We are not aware of patients in this population being admitted for COVID-19 without a RemeCare alarm signal. Although further research is needed to confirm the sensitivity and specificity of our App, the current observations show that patient-reported outcome platforms work in daily life to prescreen for COVID-19. As several cases are reported in Belgium of patients with COVID-19 collapsing and dying at home despite attempts of resuscitation as they ignored their symptoms, we hope that home patient monitoring may be helpful to alert patients with cancer to seek advice at an earlier stage.

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