In the South African public healthcare sector, patient medical records are still written on paper and stored in filing rooms. There has been an attempt to move towards a paperless electronic system in many public healthcare facilities, but owing to lack of funding, this has been a challenge to achieve. During the current COVID-19 pandemic, the virus could be transmitted through the physical manipulation of patient records by various categories of staff who handle the records with or without gloves for protection. We discuss a digital option that has been partially used at Tygerberg Hospital (TBH), Cape Town, to avoid SARS-CoV-2 patient hard-copy record manipulation. It includes assignment of a QR code to every patient admitted as a person under investigation or confirmed COVID-19 case. The QR code is synced to one of the many free online medical notes smartphone applications (apps), which are password-protected with patient information privacy regulations (Trello is used at TBH), for daily medical notes review and editing. Upon discharge, all notes made during the patient’s hospital stay, together with the discharge summary, are printed to generate a hard copy of notes for filing to avoid violation of the current national and provincial patient records policy. Doing this means that a patient will have a virtual online file through the designated app until discharge, when a physical file will be made for storage and safekeeping. It will keep physical manipulation of patient records to the minimum, and potentially assist in reducing transmission of the SARS-CoV-2 virus among healthcare workers.

Discussion
In the European Union and European Economic Area countries, most of which are developed countries with paperless electronic patient record systems, the burden of COVID-19 among healthcare workers was estimated to be ~9 - 26%.[10] This situation is still evolving in SA, since the peak of the disease curve has not yet been reached. As of 29 April 2020, nurses were found to be the most affected, accounting for 52% of all cases involving healthcare workers. At this time there were 195 reported cases of healthcare workers with COVID-19 in the private sector, and 133 in the public sector.[10] The SARS-CoV-2 virus expelled by an infected individual has been found to survive for various lengths of time on different surfaces. It can live on cardboard or paper (e.g. patient record files) for 4 - 24 hours, a time window during which the SARS-CoV-2 virus can be transmitted. The virus may remain on smooth surfaces such as paper for longer than on non-smooth surfaces such as tissue paper.[9]

The Tygerberg Hospital COVID-19 response team has been using an application called Trello to monitor the COVID status of persons under investigation (PUIs) as SARS-CoV-2 reverse transcription polymerase chain reaction results become available, the transit and transfer of PUIs and confirmed COVID-19 patients from one hospital or ward to another, and numbers of admissions, deaths and handling of records. This practice can lead to an increase in the number of healthcare workers who test positive for the SARS-CoV-2 virus, with or without development of symptoms of COVID-19. An increase in the number of quarantined healthcare personnel, and in morbidity and mortality among healthcare workers, could potentially cripple the healthcare system.

Corresponding author: S D Ntshalintshali (sipho.duncan@gmail.com)
discharges. The Trello app facilitates use of patient medical information without the physical manipulation of patient records. However, the patient record files were still kept in the wards with patients, and various healthcare personnel were manipulating the files for different reasons.

There are many medical apps designed to generate and contain patient medical histories and findings on examination and investigation. Most of these have transformed the practices and findings on examination and investigation. These apps can be used by multiple members of the same team, and a record of any changes made, and the details of the person applying changes, is kept.

A proposed algorithm that can be followed to achieve minimal manipulation of files during a patient’s hospital stay, without violating the existing regulations in patient record management, is shown in Fig. 1. The process includes generation of a QR code for each patient admitted as a PUI or confirmed COVID-19 case. This code will be attached to the patient’s cubicle at the door on single rooms, or on the patient’s wristband or bedside, until discharge. During nursing rounds for medications, or doctors’ rounds for patient review, a simple scan of the QR code will direct the clinician to the password-protected app with all the necessary information.

The patient’s information will be kept on the app for the duration of his or her stay at the hospital. Upon discharge, a discharge summary will be drafted, and the inpatient clinical notes will be typed or printed according to the app used and filed as per provincial and/or institutional regulations. Healthcare workers will therefore have minimal exposure to the physical copy of the patient’s medical records.

**Conclusions**

Further research is needed to determine the statistical significance of avoiding contact with physical copies of patients’ records to reduce COVID-19 among healthcare workers. However, we have compelling evidence in recent literature that suggests an association between handling these records and the possibility of contracting COVID-19. Alternative methods to avoid spread of COVID-19 among healthcare workers such as the one discussed should be explored.

**Learning points**

Spread of the SARS-CoV-2 virus among healthcare workers is a serious public health issue that should be addressed continually, with innovative measures put in place.

The use of modern technology such as medical apps on mobile devices could assist in reducing spread of the SARS-CoV-2 virus among healthcare workers.

Remember to safeguard the current regulations in patient care as innovative ideas arise and are implemented.

**Declaration.** None.

**Acknowledgements.** TBH COVID response team for experimenting with the Trello app.

**Author contributions.** SDN: concept, literature review, manuscript completion; CM: literature review, Fig. 1 design.

**Funding.** None.

**Conflicts of interest.** None.

---


---

![Fig. 1. Algorithm showing person under investigation/COVID-19 patient QR code – app – records process.](image-url)