

Going where the data are: Connecting to Trello for daily statistics in the COVID-19 era and beyond

To the Editor: South African (SA) hospitals have had to repeatedly escalate and de-escalate services in response to three successive waves of COVID-19 infections.^[1] While these measures ensure capacity to respond to the pandemic, they come at the expense of other services.^[2] Up-to-date statistics are required by hospital management to timeously divert adequate resources to the COVID-19 response at times of crisis, while not unnecessarily constraining other services.

Trello (Atlassian, Australia) is a web- and application-based project management tool that displays all activities in a single landscape, called a board, visible to all members of the team.^[3] It has gained traction in the SA healthcare setting, used by inpatient teams to track bed locations and co-ordinate care of patients spread throughout their hospitals. Ntshalintshali and Mnqwazi^[4] previously described how we repurposed Trello to keep track of COVID-19 patients at our institution. We were retrospectively able to export these data and plot the impact of the pandemic at our institution on a day-by-day basis.^[5] Trello was similarly used at other institutions.^[6]

Trello makes a representational state transfer (REST) application programming interface (API) available to software developers.^[7] A REST API is a set of standards governing the transfer of information between different

software or websites, in this case allowing the secure transfer of data from a Trello board to an authorised user. We were able to use this facility to collect and aggregate data from the Trello boards of all COVID-19 teams in real time and in an automated manner. As teams necessarily update these boards in the normal course of their ward rounds, we were able to automatically collect and compile the latest COVID-19 statistics at our institution and generate reports, such as trends in daily admissions, total inpatients, number of patients requiring high-flow nasal cannula oxygen therapy (Fig. 1) and outcomes, without the need for any dedicated data-capturing activities or extra work on the part of clinicians. Data capturing was therefore adapted to the clinician, rather than requiring the opposite. A detailed discussion of the technical aspects of this solution is beyond the scope of this letter, but we have summarised the key steps in Box 1.

Having up-to-date information on hospital-specific COVID-19 trends proved vitally important in making managerial decisions and, in conversation with the wider hospital, to ensure that resources were redirected as needed.

Institutions and individuals making use of Trello must be wary of potential pitfalls and consider the Protection of Personal Information Act.^[8] In our experience, specific issues include incorrectly setting board visibility to 'Public' rather than 'Private', allowing stored patient information to be found on search engines and accessible by anyone on the internet, and temporary team members not leaving the Trello board

once they rotate out. These problems should be audited regularly.

Healthcare workers may not be the most 'tech-savvy', and digital solutions such as the one we implemented may seem daunting or impossible. However, we should never forget that we do not operate in isolation. Many tertiary academic hospitals are part of a wider university community where the necessary skills are readily available, even at undergraduate level. We owe it to ourselves,

Box 1. Outline of steps to collect and report inpatient statistics from Trello boards, in collaboration with information technology partner

1. Appoint an information officer, typically a senior clinician, to be the hub of the data collection activities.
2. Add the information officer as a member to each inpatient team's Trello board.
3. Obtain the information officer's developer key and secret token from Trello (visit <https://trello.com/app-key>).
4. Data collection script developed by information technology partner.
5. Script scheduled to automatically request current information from Trello at regular intervals using the REST API (documentation at <https://developer.atlassian.com/cloud/trello/rest>).
6. Script automatically processes and reports information returned in step 5, providing management team with latest hospital statistics.

REST = representational state transfer; API = application programming interface.

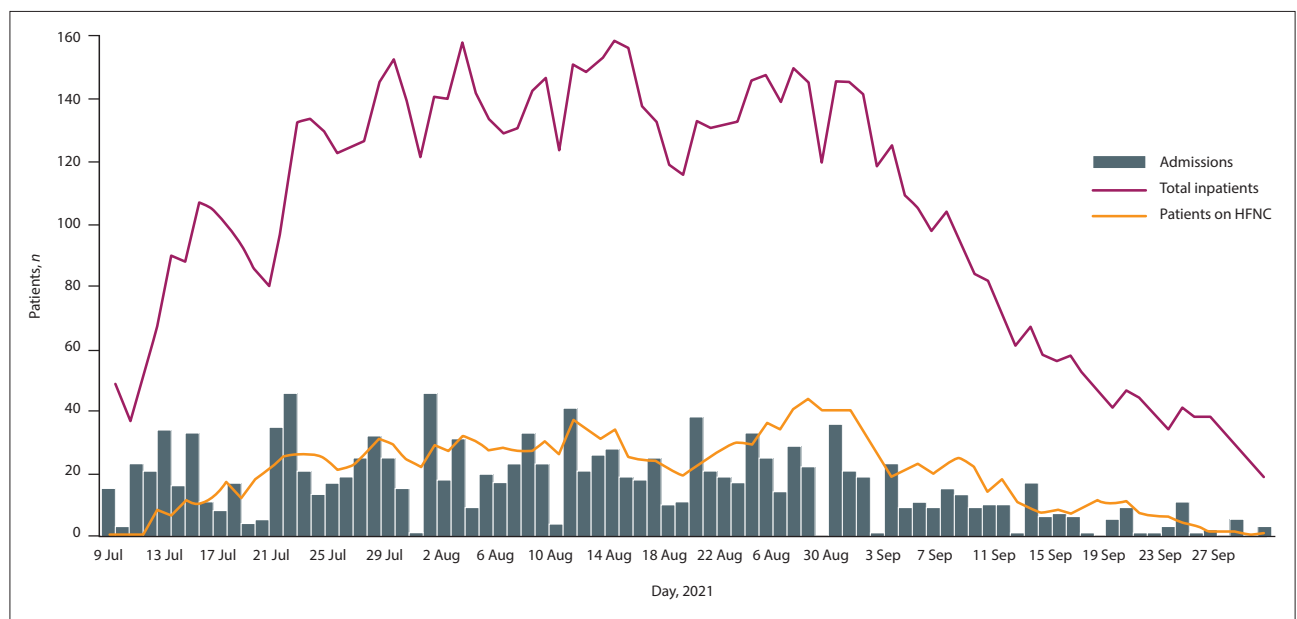


Fig. 1. Automated report of daily admissions, inpatients and patients on HFNC oxygen therapy in the COVID-19 wards (confirmed and persons under investigation) during the third wave at Tygerberg Hospital, compiled from Trello data and displayed using Google Charts. (HFNC = high-flow nasal cannula.)

our patients and our colleagues to look beyond our silo at emerging technologies that can benefit our field, and build bridges to promote intersectoral collaboration. The fruits of such projects will not only help us to respond more effectively to the current COVID-19 pandemic, but will be of benefit for many years to come.

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