Ospidéil OL
UL Hospitals

An Electronic "Covid-19" Dashboard aids Post-Admission Surveillance and Outbreak Control

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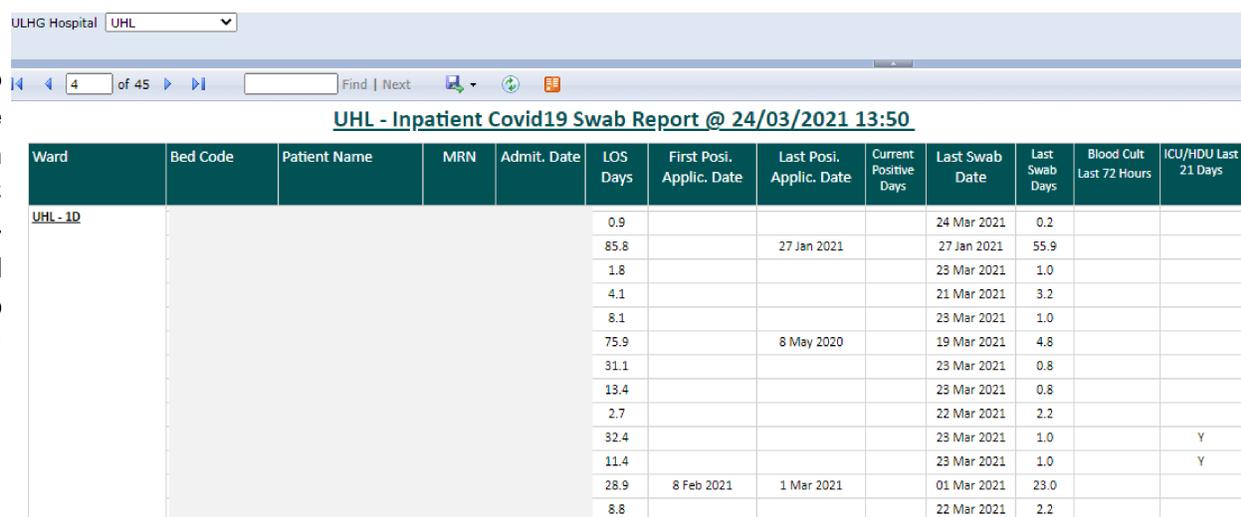
Background

In December 2020 we developed a real-time electronic dashboard that integrates information from the patient administration system (iPMS), infection control database (ICNET) and the laboratory information management system (APEX). The primary "Covid swab report" dashboard shows the current Covid-19 status on a per-ward basis, providing at a glance a comprehensive overview of the current Covid-19 situation for each inpatient ward in our hospital group. Other reports were designed on the same template such as the "Covid Isolation Report" and the "Covid De-listed Report" to address specific infection control and bed management needs.

Data from the three systems are merged into the UL hospitals "SQL Server Database" using a messaging system called Mirth. Data Analysts in the Planning, Performance & Business Information Department wrote SQL scripts to join the data based on the MRN number. Reports are created with Microsoft's SQL Server Reporting Services: the live reports can be viewed via a web link once the user has been granted permission to access it.

Examples of Electronic dashboards

1. Covid Swab report for each ward

The swab report has data for each ward in the hospital group and includes patient demographics, dates of first positive Covid-19 swab and most recent Covid-19 positive swab (both are provided if different), and time since last swab. The IPC admin team clerical staff use this report to order post-admission surveillance swabs for patients using a standard order set. It also flags patients with recent blood cultures (who may have fever, see section 2 below) and those with ICU/HDU admission who may have prolonged viral shedding.

ULHG Hospital UHL

UHL - Inpatient Covid19 Swab Report @ 24/03/2021 13:50

Ward	Bed Code	Patient Name	MRN	Admit. Date	LOS Days	First Posi. Applic. Date	Last Posi. Applic. Date	Current Positive Days	Last Swab Date	Last Swab Days	Blood Cult Last 72 Hours	ICU/HDU Last 21 Days
UHL - 1D					0.9				24 Mar 2021	0.2		
					85.8		27 Jan 2021		27 Jan 2021	55.9		
					1.8				23 Mar 2021	1.0		
					4.1				21 Mar 2021	3.2		
					8.1				23 Mar 2021	1.0		
					75.9		8 May 2020		19 Mar 2021	4.8		
					31.1				23 Mar 2021	0.8		
					13.4				23 Mar 2021	0.8		
					2.7				22 Mar 2021	2.2		
					32.4				23 Mar 2021	1.0		Y
					11.4				23 Mar 2021	1.0		Y
					28.9	8 Feb 2021	1 Mar 2021		01 Mar 2021	23.0		
					8.8				22 Mar 2021	2.2		

The IPC admin team identify suitable patients for swabbing using the swab report and rules in an SOP. Example Email to a ward from the IPC admin team:

Please swab the below patients for Covid-19 today as part of routine surveillance for Covid-19 (requested by the infection control team), unless you are aware that a patient ever had a Covid-19 positive result in the past. In some cases IPC may be unaware of previous positive results, please disregard surveillance swab request in those instances.

As per updated surveillance policy v3 09/02/2021, surveillance swabs will be requested less frequently than previously. They will now be requested on day 3 post admission, with another swab requested sometime between days 5 to 7 post admission. After that (e.g. from the second week of patient admission onward), swabs will be requested every 5 days.

The ward should complete the request form for the swab as per usual practice, and write in the clinical details box that this is a "Post-Admission Surveillance Swab, Lab Code UCOV." Please ensure the swab reaches the laboratory by tomorrow morning at the latest.

If the patient has already been swabbed sometime in the past 24 hours, has been discharged, transferred or declines a swab, then it is not required

2. Blood culture and Covid status table

This forms part of the overarching swab report. It highlights to the infection control nurses any patients admitted >4 days who has a blood culture sent in the past 72 hours but no Covid swab in that time. Such patient may have had blood culture sent for pyrexia, if so HSE guidelines indicate that a Covid test should also be performed. The blood culture dashboard provides a prompt for the IPCNs to discuss these patients on their daily rounds.

UHL - Inpatient Covid19 Swab Report @ 24/03/2021 14:56

Ward	Bed Code	Patient Name	MRN	Admit. Date	LOS Days	First Posi. Applic. Date	Last Posi. Applic. Date	Current Positive Days	Last Swab Date	Last Swab Days	Blood Cult Last 72 Hours	ICU/HDU Last 21 Days
UHL - 3C	D3C-R02-B01			12 Mar 2021	11.7				16 Mar 2021	7.80	Y	
UHL - 6B	D6B-R08-B01			13 Mar 2021	10.8				19 Mar 2021	5.20	Y	
UHL - ICU	DICU-R02-B01			13 Mar 2021	11.3				17 Mar 2021	7.20	Y	Y
UHL - ICU	DICU-R06-B01			03 Feb 2021	49.4				16 Mar 2021	7.80	Y	Y
UHL - Step Down CCU	DSCU-R13-B01			24 Feb 2021	28.1				20 Mar 2021	4.20	Y	

Table 1: This table lists all current inpatients in UHL that meet the following 4 criteria:

(1) have a blood culture received by the laboratory in the past 72 hours.

(2) 4 or more days have elapsed since the 'Last Swab Date'.

(3) the length of stay (LOS) is greater than 4 days.

(4) 90 days have elapsed since the patient's most recent positive Covid tag was applied or the patient has never had a positive Covid tag.

3. Covid Isolation Report

This report includes every patient in the hospital currently tagged as Covid-19 positive (i.e. transmission based precautions still apply, or, for ICU/HDU they had Covid-19 during their current admission). In addition to patient demographics and time since last positive swab, it includes time since symptom onset if this data was manually entered in ICNET using the "extended properties (XP)" function for the organism SARS-CoV-2. It also includes data entered using XP drop downs for current respiratory support, fever/blood cultures in past 5 days, and whether patient had ICU/HDU admission, in which case we extend isolation to 21 days minimum. Finally, clinical notes by IPC/Micro/ID in ICNET are included indicating when patients can come out of isolation.

UHL - Covid Isolation Report @ 24/03/2021 09:25

Patient Name	MRN	Patient DOB	Ward	Bed Code	Clinician	Last Posi. Applic. Date	Current Positive Days	Symptom Onset Date	Symptoms Days	Respiratory Support	Fever Last 5 Days	Blood Cult Last 5 Days	Clinical Notes
			ICU	Room 10 Bed 1		28/02/21	24					Y	
			8C	Room 10 Bed 01		01/03/21	23			None/Supp. O2	No		spoke with team reg, day 14, patient is symptomatic and requiring oxygen therapy, not for delisting atm, AZ 15/3/21, day 22, still requiring 40% O2, not for delisting, Az 23/3/21
			ICU	Room 5 Bed 1		01/03/21	23						
			8C	Room 19 Bed 01		09/03/21	15			None/Supp. O2	No		Spoke with team reg, day 15, no fever and no O2 requirement, delisted from covid precautions by team, Az 23/3/21
			8B	Room 09 Bed 01		10/03/21	14			None/Supp. O2	No	Y	spoke with team reg, no fever or O2, day 13, plan for delisting from covid precautions tomorrow, AZ 23/3/21
			8D	Room 20 Bed 01		12/03/21	12			BiPAP/CPAP	No		day 11 post covid + swab, requiring Cpap at the moment, not for delisting, AZ 23/3/21