



# An audit of chest x-ray request adequacy and standardized reporting in Emergency Department suspected COVID-19 patients

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# Introduction

Although the formal diagnosis of COVID-19 based on viral RNA isolation, different thoracic imaging modalities can play a role in the initial diagnostic workup where RTPCR would not be time-effective, as well as identify and help manage those patients with COVID-19 pneumonia<sup>1</sup>.

The BSTI and NHS England proposed a guideline and decision support tool for the use of imaging in the work-up of COVID-19 patients.



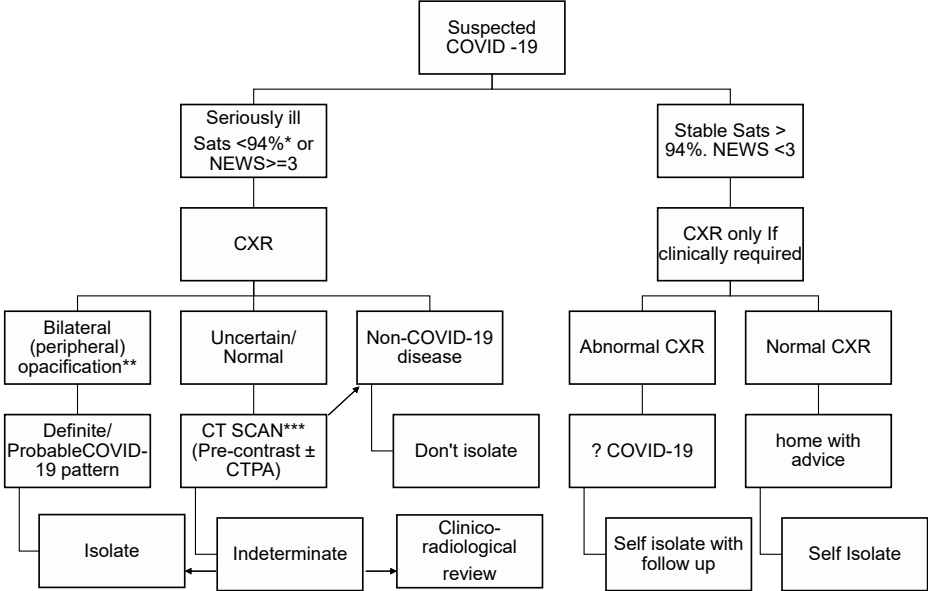
# Objectives

To investigate the adequacy of chest x-ray requests in suspected COVID-19 patients presenting to the emergency department, as well as the use of COVID-19 standardized reporting categorization.



# Methods

100 chest x-rays were retrospectively and randomly selected among suspected COVID-19 patients presenting to our Emergency Department between April 1st and April 15th, 2020. Multiple parameters were collected, including NEWS score on presentation, symptoms, clinical question, presence of significant findings on the x-ray and use of the standardized categorisation<sup>3</sup>. These were assessed against the BSTI guidance produced in the “Radiology decision tool for suspected COVID-19 and adapted to the context of emergency medicine.



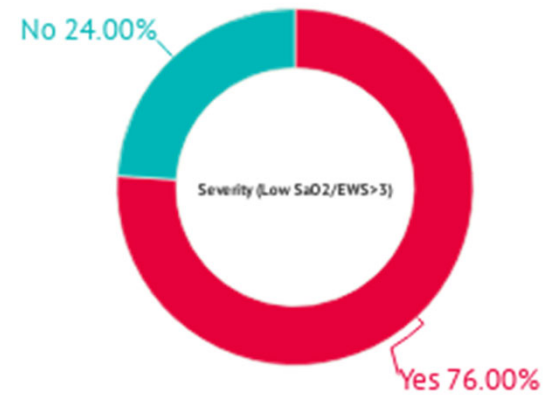
Adapted from the BSTI Radiology decision tool for suspected COVID-19



Results

## Case acuity

Most patients were seriously ill ( as defined by the BSTI guidance by a low SaO2 or NEWS of 3 or higher) at the time of referral, making the request adequate for this subgroup.



Results

## Reason for referral/clinical question

The main clinical question was looking solely for radiological features of COVID-19 Pneumonia at 52%. Other clinical questions included various differential diagnoses, detailed below.



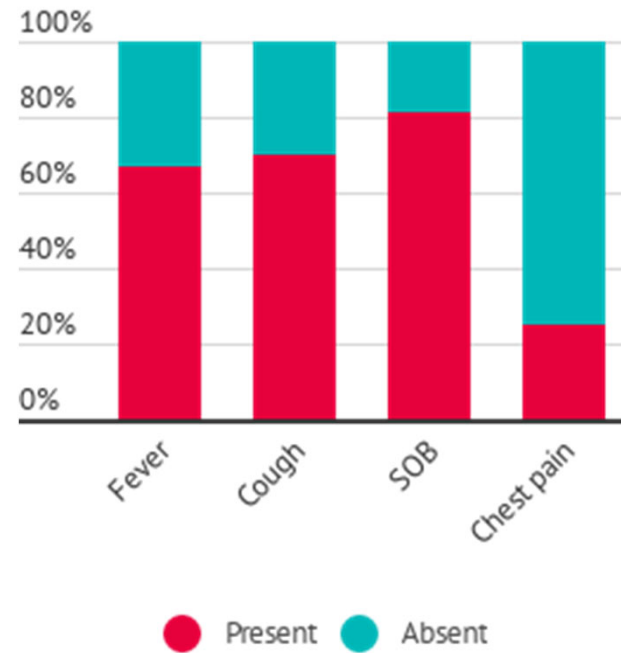
Clinical question	Percentage
?Covid features	52%
? Covid ?Pneumonia	40%
?Covid ? Heart failure	4%
?Covid ?Pneumothorax ? Effusion	2%
?Covid ?widened mediastinum	1%
?Covid ?Pneumonia, ?Heart failure	1%
Unavailable	1%



Results

## Symptoms

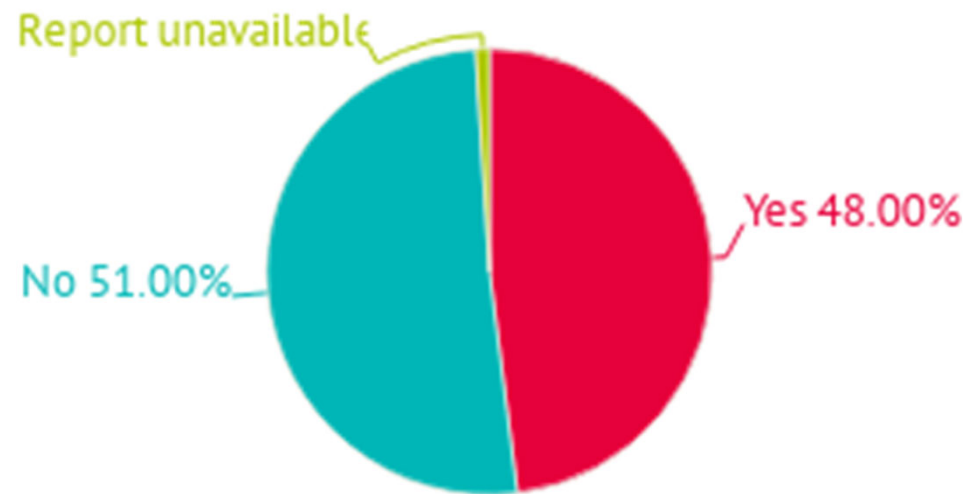
Patients referred for chest x-rays were assessed for the presence or absence of COVID-19 infection symptoms, results are outlined below, with most patients being polysymptomatic.



Results

## Significant findings on x-ray

Half of the x-rays included in the audit showed significant findings.

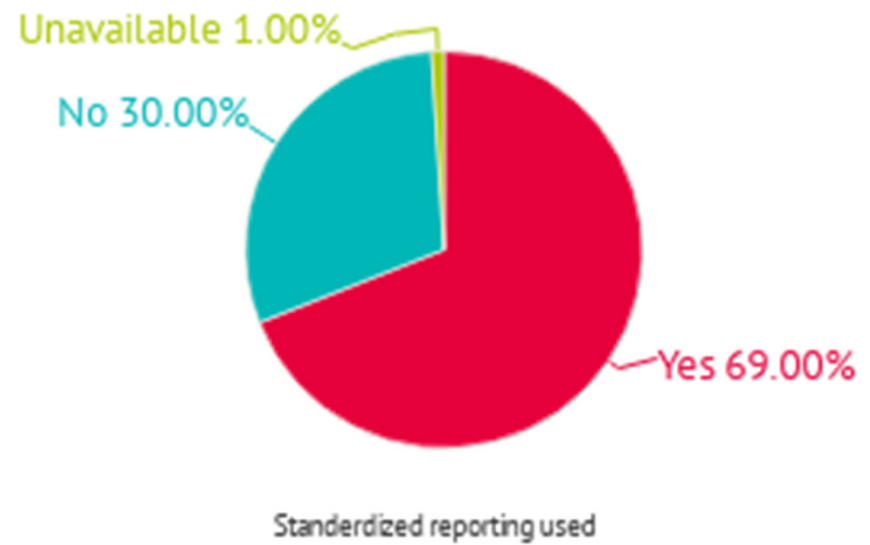




Results

## Use of standardized reporting

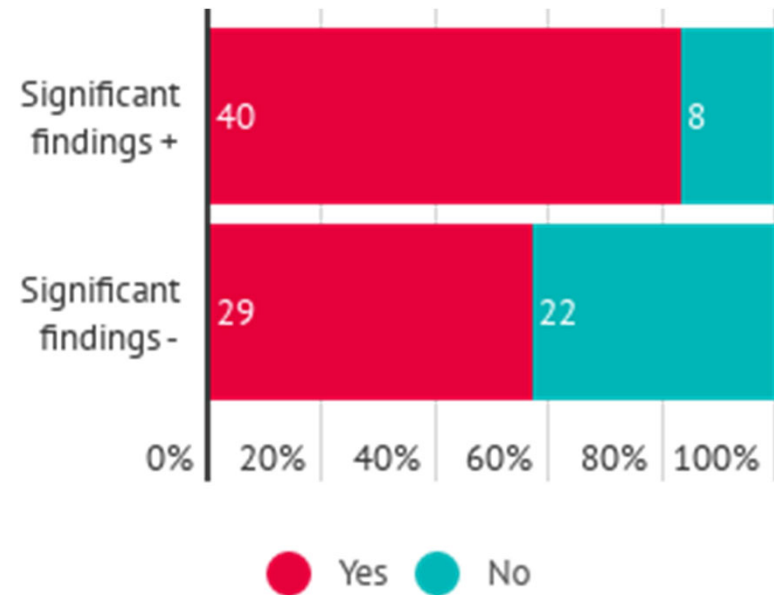
A standardized reporting nomenclature was used in the majority of x-rays included in the audit.



Results

## Use of standardized reporting depending on presence of significant findings

Standardized reporting was used significantly more often in cases where the x-ray showed significant findings.



Standardized reporting depending on presence of significant findings



## Discussion

Despite little awareness of the BSTI guidance on the use of imaging in suspected COVID-19 pneumonia amongst referring clinicians, most requests were found to be adequate as per the decision tool, with most cases comprising of severely ill polysymptomatic patients. Clinicians used imaging to identify COVID-19 pneumonia features as well as rule out other conditions.

Reporting clinicians, widely used standardized reporting in these cases, with more consistent use in cases where significant findings were identified. This showed that within our clinical context, both referrers and reporters closely adhered to the BSTI guidance. With a second COVID-19 infection rate peak predicted, a re-audit could be beneficial to monitor the trend in use of thoracic imaging for this cohort of patients.





**Thank you for  
your attention**

