Faster CT scan protocol authorization based on web scraping solutions improves patient care

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Introduction

Patient workflow to get a CT scan in our hospital.

Patient is admitted to the ER

Attending physician orders imaging exam

Radiology resident defines appropriate CT scan protocol

Patient undergoes CT scan

Radiologist reports the findings
Methods

Development and function of our web scraping tool.

Scraping tool using Selenium with Python and ...

... Chromedriver to check Hospital Information System (HIS)

Texts Radiology resident on call via Whatsapp®

CT scan protocol is defined
Methods

Brief group definition and statistical analysis.

- **With Tool**
  - 7
  - *We authorized these patients during a night shift in April 2021*

- **Without Tool**
  - 7
  - *Another resident not knowing our tool authorized these patients during a regular night shift in April 2021*

Mann-Whitney U Test
- Group 1 → **with tool**
- Group 2 → **without tool**
We calculated the average time between ordering and authorizing a CT scan with and without our tool.

<table>
<thead>
<tr>
<th></th>
<th>With Tool</th>
<th>Without Tool</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time</td>
<td>14.71</td>
<td>52.28</td>
</tr>
<tr>
<td>(STD)</td>
<td>6.2</td>
<td>31.8</td>
</tr>
<tr>
<td>minutes</td>
<td>minutes</td>
<td>minutes</td>
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</tbody>
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p-value: 0.0075
We observed a decrease in time between exam order and authorization.

- Faster exam execution

- Facilitates hospital workflow
- Improves patient care
Here's the code of our web scraping tool.

https://github.com/eduardocaminha/ctauthorization.git
Thank you.