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# Improving Workflow in Nuclear Medicine to Ensure Correct Radiopharmaceutical Injection



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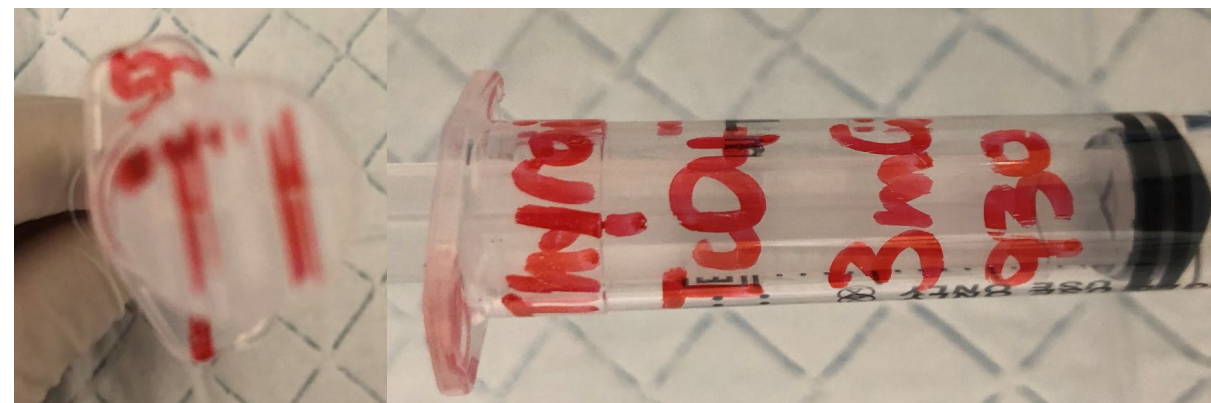


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# INTRODUCTION

- Radiopharmaceutical syringes were prepared and labeled with different syringe codes, types of scans, and radioactivity (*Figure 1*).
- These syringes are delivered in bulk from authorized manufacturer and do not contain patient details due to the Personal Data Protection Act.
- The busy workload, with nearing 20 radiopharmaceutical injections and handling different types of radiopharmaceutical injections within a short period of time, could ultimately lead to a higher possibility of wrong radiopharmaceutical injections and unnecessary radiation to patient.
- Aim: To deduce the likelihood of wrong radiopharmaceutical injections.

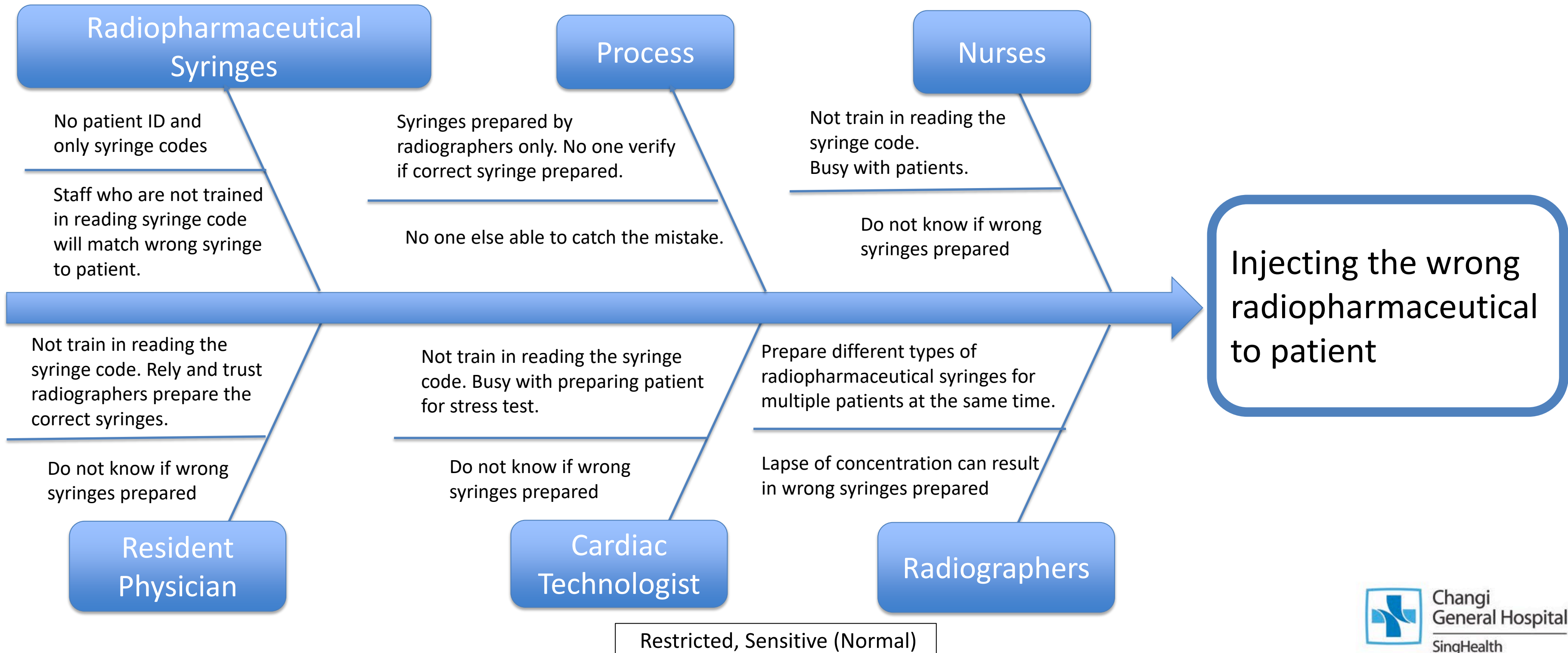


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*Figure 1: Example of original radiopharmaceutical syringe from authorized manufacturer*

# METHODS

## Root cause analysis



# Plan-Do-Act-Study (PDSA)

## 1<sup>st</sup> PDSA

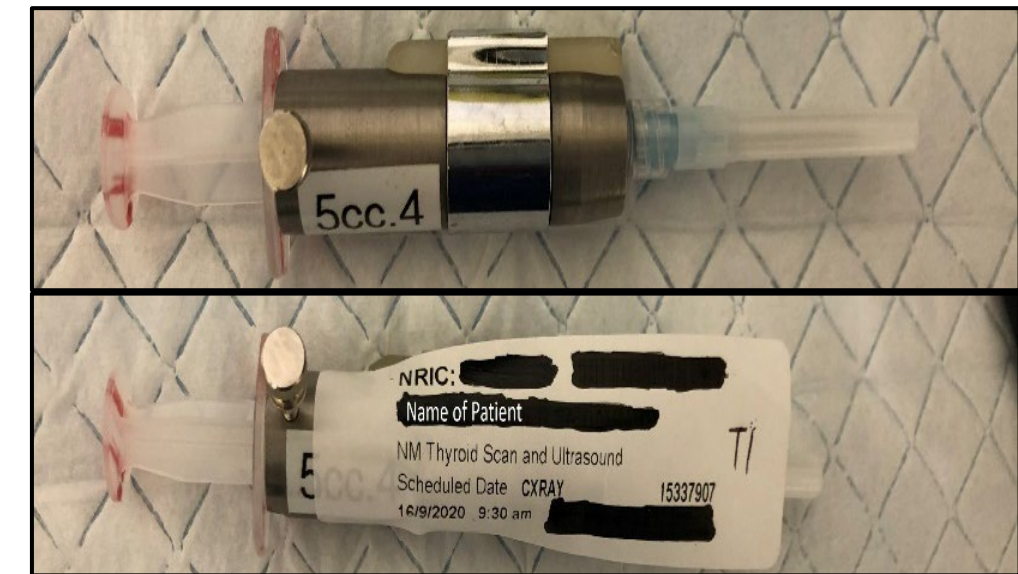
- Staff are to carry a laptop for verification purposes before injection.
- Multitask, rely on injection staff and compromise hygiene purposes.

## 2<sup>nd</sup> PDSA

- Tagging a patient sticky label to radiopharmaceutical syringes.
- Rely on radiographer who prepare the syringes and not all staff understand the syringe code.

## Further Improvement on 2<sup>nd</sup> PDSA

- Second verifier to verify the syringe code and patient details against patient before injection.
- Train all staffs to read syringe code.
- Responsibility shared among all staffs.



*Figure 2 : Example of Shielded Radiopharmaceutical Syringe without label (top) and with patient label (below)  
Information on sticky label: patient name, ID and type of scans.*

## Success Indicators

Low or no medical errors on the wrong radiopharmaceutical injections post-implementation of the patient sticky label and second verifier.

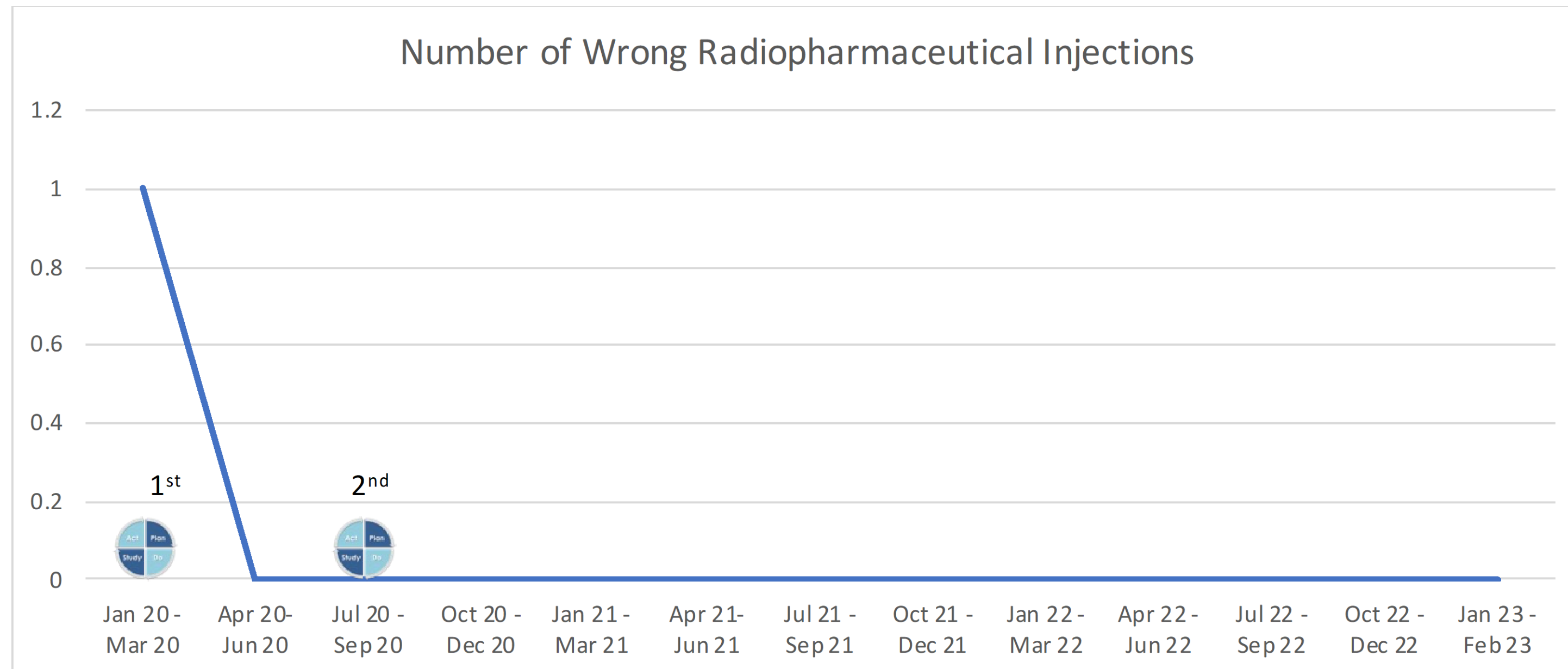
Increase staff confidence level when performing the radiopharmaceutical injections.

High compliance rate to the new workflow.

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# RESULTS

Figure 3: There were zero radiopharmaceutical injections since the implementation of patient sticky label and second verifier (February 2020 to February 2023).



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Figure 3

- A survey conducted among 38 Nuclear Medicine staffs (5 radiographers, 2 resident physicians, 11 cardiac technologists and 1 other) on their confident level in performing the injections post-implementation.
- Average confidence level for the patient sticky label with second verifier scored the highest (8.11).
- Random audit were performed and showed that 100% compliance rate to the new workflow.

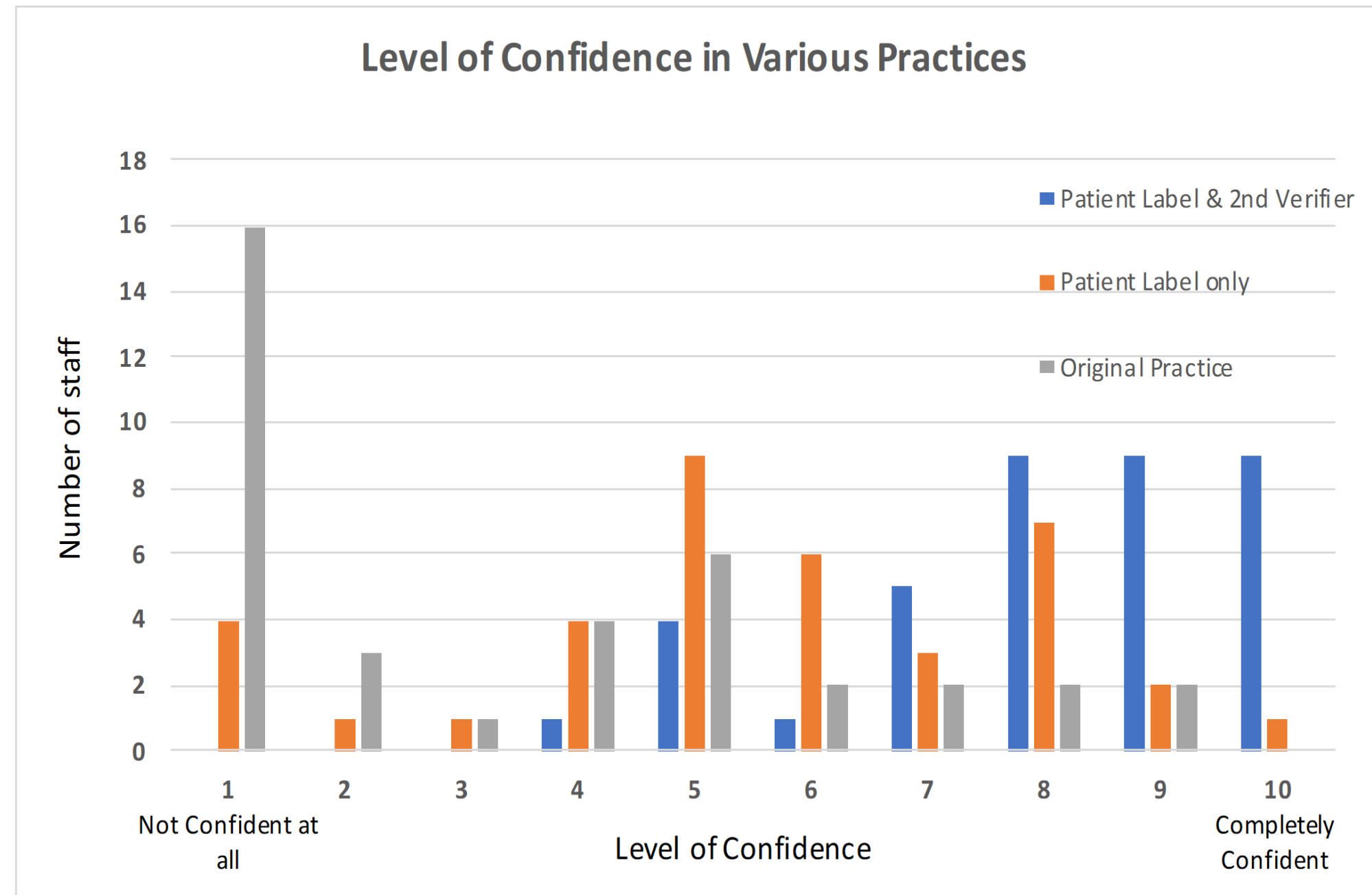


Figure 4: Level of Confidence in Various Practices

# DISCUSSION

- This improved workflow has ensured correct radiopharmaceutical injection is performed by all staff at all times.
- Having a patient sticky label on the radiopharmaceutical syringes and the presence of the second verifier increase the confidence level when performing injection and minimize the possibility of selecting the wrong radiopharmaceutical syringes.

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# Acknowledgements

## Nuclear Medicine Team:

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- Cardiac Technologists from Clinical Unit Measurement

Thank you for their contribution and support to the project.

# Thank you for Your Attention

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