

Justification of Cone Beam CT Scans taken of Lower Wisdom Teeth in the Oral Surgery Department

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Safety & quality

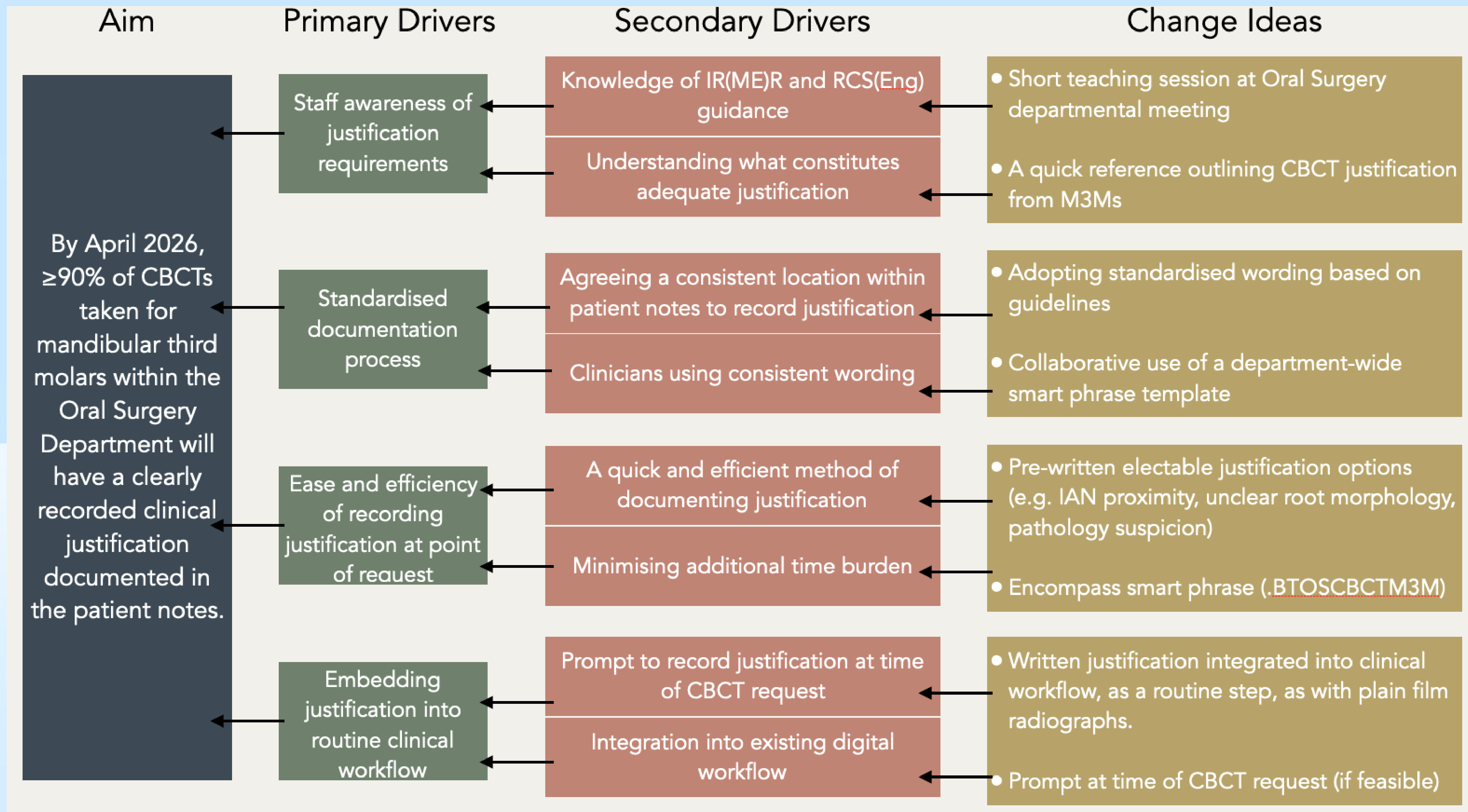
Background

- Cone beam CT (CBCT) aid in visualisation of structures in 3D where plain film 2D X-rays do not. They can help to assess extent of pathological lesions or proximity of anatomical structures to each other.
- CBCT is helpful for lower wisdom teeth (mandibular third molars), where roots can be situated very close to the inferior alveolar nerve supplying sensation to the lip, chin, and cheek. If a 2D image suggests this, a CBCT is justified to assess the risk more accurately.
- This must be documented to comply with IR(ME)R, ensuring radiation exposure is kept as low as reasonably practicable and only used when necessary.

Aim

- By April 2026, more than 90% of all CBCTs taken for mandibular third molars within the Oral Surgery Department will have a clearly recorded clinical justification documented in the patient notes.





Change Ideas

- Encompass smart note:

Smart note = .BTOSCBCTM3M

Easy and quick to fill out a sound justification

Tick boxes

Following review of OPT (plain film) ensures compliance with guidelines

Mandibular 3rd molar CBCT justification (following review of OPT):

☒ Darkening of roots ☒ IAN canal / roots deviation ☒ Loss of IAN canal cortication ☒ IAN canal / roots narrowing ☒ Other:

Report:



- Raise the awareness at department audit meetings

Measures & definitions

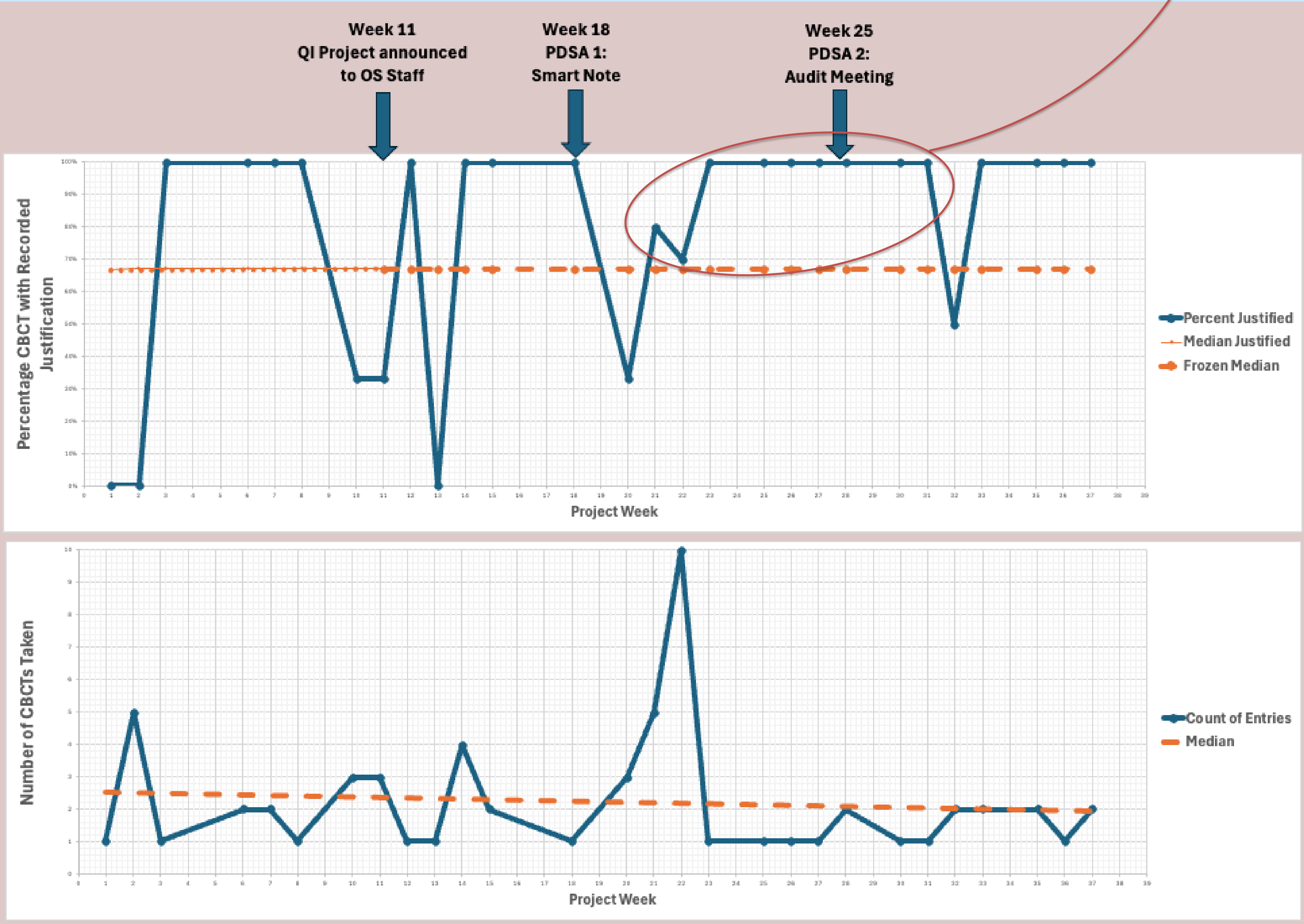
- Process measure: number of CBCTs requested to assess lower wisdom teeth within the Oral Surgery department each week.
- Outcome measure: Percentage of those taken which have a justification recorded in the patient notes on Encompass.
- Balance measure: Extra “paperwork”; time taken to write down the justification.

- Definitions:
- Only CBCTs taken of M3Ms are included
- Only those requested by the Oral Surgery department
- Had to be ahead of planned surgery
- All data collected by Me



Run chart:

A shift of 9 data points above median



Initial median % justified CBCTs 67%
Median % justified CBCTs post-PDSA 1 100%

PDSA 3: Poster

CBCT justification

IrMER: all radiation doses for patients must be kept as low as reasonably practicable

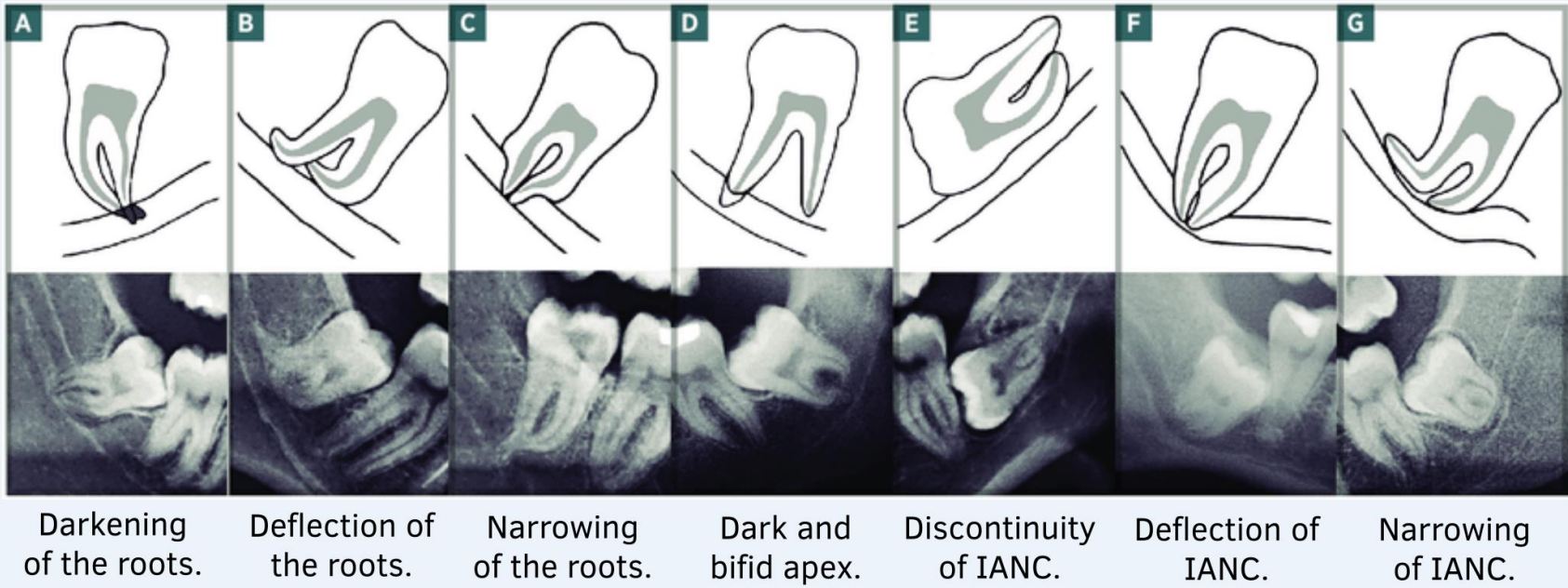
RCS(Eng) & IrMER GUIDELINES

Written Justification of Cone Beam CT Imaging for Mandibular Third Molars



JUSTIFICATION IS ESSENTIAL OVER EXISTING PLAIN FILM

CBCT may be justified when the plain film suggests possible risk to the inferior alveolar nerve (IAN):



Document clearly in the patient's notes:

- The plain film findings
- The clinical question / diagnostic uncertainty
- Why CBCT is required and how it will change management



Conclusions

- The median justification rate increased from 67% at baseline to 100% following PDSA cycle 1. A sustained shift of 9 consecutive data points above the median was observed, indicating a process change. Clear change identified.
- This QI project achieved a sustained improvement in CBCT justification recording. Key drivers included effective team engagement, clear communication, and integration of Encompass Smart Note into clinical workflow, supporting reliable and consistent documentation.



Next steps

- Display CBCT justification guidelines in clinical areas to reinforce best practice.
- Continue regular audit to ensure sustained compliance and identify opportunities for further improvement.



- **References:**

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UK Government (2017) Ionising Radiation (Medical Exposure) Regulations 2017. London: The Stationery Office. Available at: <https://www.legislation.gov.uk/uksi/2017/1322/contents/made> (Accessed: 13 April 2026).

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