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## **Patient-specific in-vivo QA in MRGRT: 3D EPID dosimetry for the Unity MR-linac**

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## Propositions

### **Patient-specific in-vivo QA in MRGRT: 3D EPID dosimetry for the Unity MR-linac**

1.

*EPID dosimetry should become widely available as there are no alternative tools to perform independent, rapid and automatic plan QA in the Unity MR-linac.*

2.

*Routine and clinical validation of patient specific radiotherapy dose calculation on MRI images is needed, and portal dosimetry is a method to do that.*

3.

*When moving from conventional to online adaptive radiotherapy, pre-treatment dosimetric QA becomes a meaningless concept. In vivo dosimetric QA, however, remains a powerful end-to-end test.*

4.

*The proposed adapted back-projection algorithm for the Unity MR-Linac is valid for gross error detection. However, it is by no means clear at what stage an error becomes gross.*

5.

*Although the radiotherapy equipment manufacturing industry have learnt valuable lessons from the past incidents and have incorporated several redundant safety features in their products, one cannot assume a perfectly safe product. Building better machines should not stop us from having QA tools.*

6.

*The high cost of MR-guided radiation treatments with respect to the anticipated clinical benefit makes rapid wide clinical availability unlikely.*

7.

*Machine learning has proven to be both smarter and more ignorant than humans. Until explainability of their decisions is traceably clear, acceptability in the clinics is utopic.*

8.

*Smoking mortality is much higher than Covid19's, yet people can smoke freely at their homes while cities are on lockdown.*

9.

*In the long term, society's changes in mobility after Covid19 might actually save more lives than the virus ended.*

10.

*The joy of living abroad as an expat, and the amusement of getting to know people, culture, languages, is only tarnished by the bitterness of realizing that life goes on at home.*