

Multi-Site Validation of a Universal Deep Learning–Based Synthetic CT Model for MR-Only Radiotherapy

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BACKGROUND

- Why MR-Only Radiotherapy?**
- Leverage superior soft tissue contrast from MRI
 - Eliminates CT simulation & ionizing radiation
 - Removes MR–CT registration errors

STUDY DESIGN

164

Patients

5

Body Sites

3

Quality evaluation

Anatomical Sites:

H&N

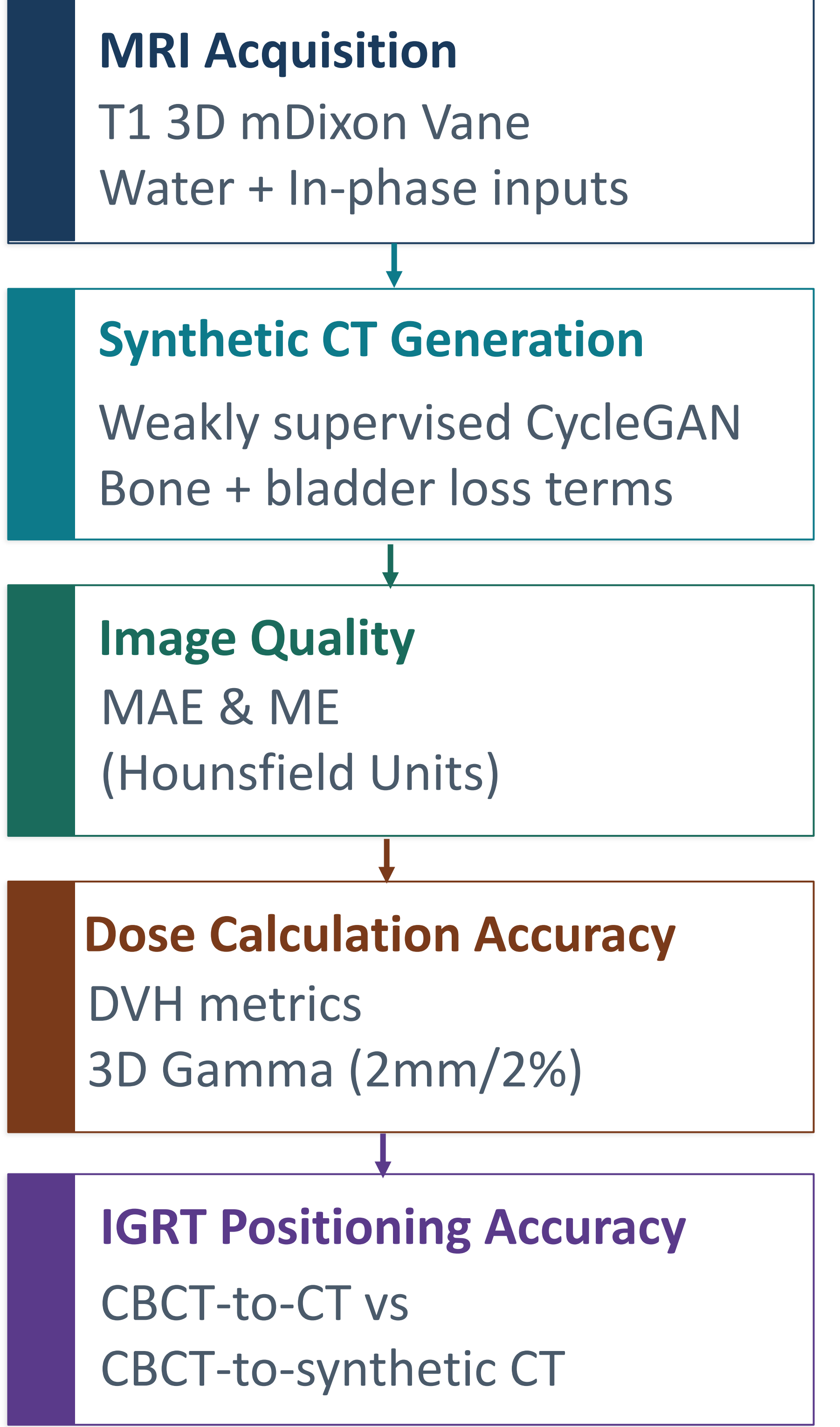
Thorax

Abdomen

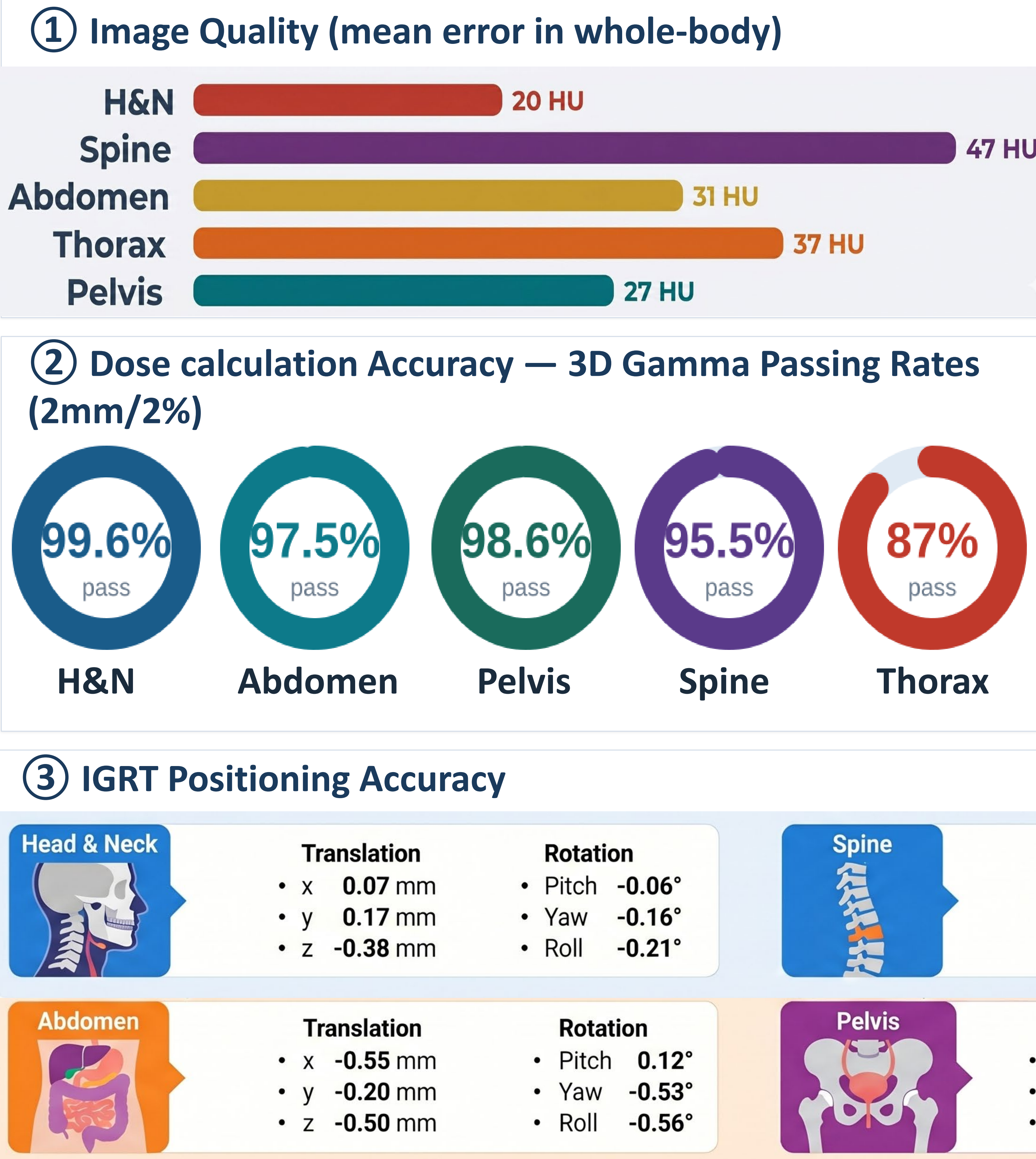
Pelvis

Spine

METHODOLOGY PIPELINE



RESULTS



CONCLUSIONS

- **Unified Model**
Single CycleGAN for all body sites — no site-specific models needed
- **Clinical acceptable**
Image quality, dose accuracy & positioning validated across all 5 sites
- **Thorax Challenge**
Lung HU mismatch addressable via HU override strategy

H&N

Thorax

Abdomen

