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## Referral pathways

### Dental screening: pre-cardiac surgery

Sir, we were interested to read the letter by Lin, describing the development of a pre-cardiac surgery screening *pro forma* by our colleagues in Oral and Maxillofacial Surgery, Plymouth, for dental assessment.<sup>1</sup> This had been devised following on from a similar pilot *pro forma* outlined in the paper by G. Allen and A. Brooke,<sup>2</sup> arguably bringing a more consistent screening for dental pathology prior to invasive cardiac procedures, specifically those at risk of infective endocarditis (IE).

We have also developed a patient referral pathway as we noted in our recent paper.<sup>3</sup> The literature remains poorly defined as to the exact benefit of dental intervention prior to cardiac valve surgery,<sup>4</sup> with some suggesting that a higher incidence of IE was noted in those patients receiving dental treatment pre-surgery compared with those who did not.<sup>5</sup>

In our recent paper, we debated the value of one-off, time-limited ‘treatment bursts’ for these patients, in the absence of addressing chronic, long-term dental disease.

What we think can be agreed is that these patients deserve tailored, preventative advice as part of their cardiac surgery preparation and a period of follow-up after dental

treatment,<sup>2,4</sup> as chronic lesions cannot be considered fully resolved.<sup>4</sup>

Who provides this treatment, when and in what environment is open for debate, but we should strive for it to be timely, safe, effective and efficient in its delivery.

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## Artificial intelligence

### Cloud intelligence in diagnosis?

Sir, we have recently read the insightful paper by Dolan *et al.*, which discusses clinical decision-making for individuals with hypodontia, specifically those with peg and missing lateral incisor teeth.<sup>1</sup> Patients with hypodontia often experience the absence or abnormal peg-shape of lateral incisor teeth, affecting both their appearance and overall dental health.

Achieving a successful treatment outcome can be challenging. Collaborating with various specialists, including orthodontists and restorative dentists, is essential to create customised treatment plans that address long-term care and resource considerations. Healthcare organisations are progressively adopting AI to streamline time-consuming, repetitive tasks.

Beta versions of AI software are demonstrating growing potential in handling these tasks and are moving towards increased efficiency. Furthermore, AI has shown significant progress in diagnostics, becoming a valuable asset in the dental field. Some cloud-based AI

software solutions like Dental Monitoring<sup>2</sup> (<https://dentalmonitoring.com/>) and Diagnocat<sup>3</sup> ([www.diagnocat.com](http://www.diagnocat.com)) can significantly enhance the management of hypodontia and related dental conditions. To learn more, readers can visit <https://dentalmonitoring.com/contactus/> and <https://diagnocat.com/> for a demonstration of the software’s capabilities. Diagnocat’s pioneering technology is built upon a deep learning approach that transforms 3D Dicom files into segmented STL files, thus revolutionising digital dentistry. This automated process extracts image features, substantially improving treatment outcomes by seamlessly integrating with images. Diagnocat offers clinical support by identifying anatomical areas, common findings, and the treatment history for each tooth, allowing it to detect over 65 different conditions. Furthermore, it generates AI reports for quality control and immediate patient presentations, accessible anytime from any device.

The deep learning algorithms employed by cloud-based AI software streamlines and enhances the treatment planning process, ensuring that patients receive the most effective and personalised care possible. Beyond diagnostics and treatment, deep learning is advancing dental education and research by extracting valuable insights from vast amounts of data, promoting evidence-based practices and standardisation of care. Moreover, improving dental appearance is a significant motivator but it demands a complex treatment process for stable outcomes. A collaborative effort by a multidisciplinary team, working closely with the patient, takes into account individual, overall health, and clinical aspects to determine the optimal course of action.

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