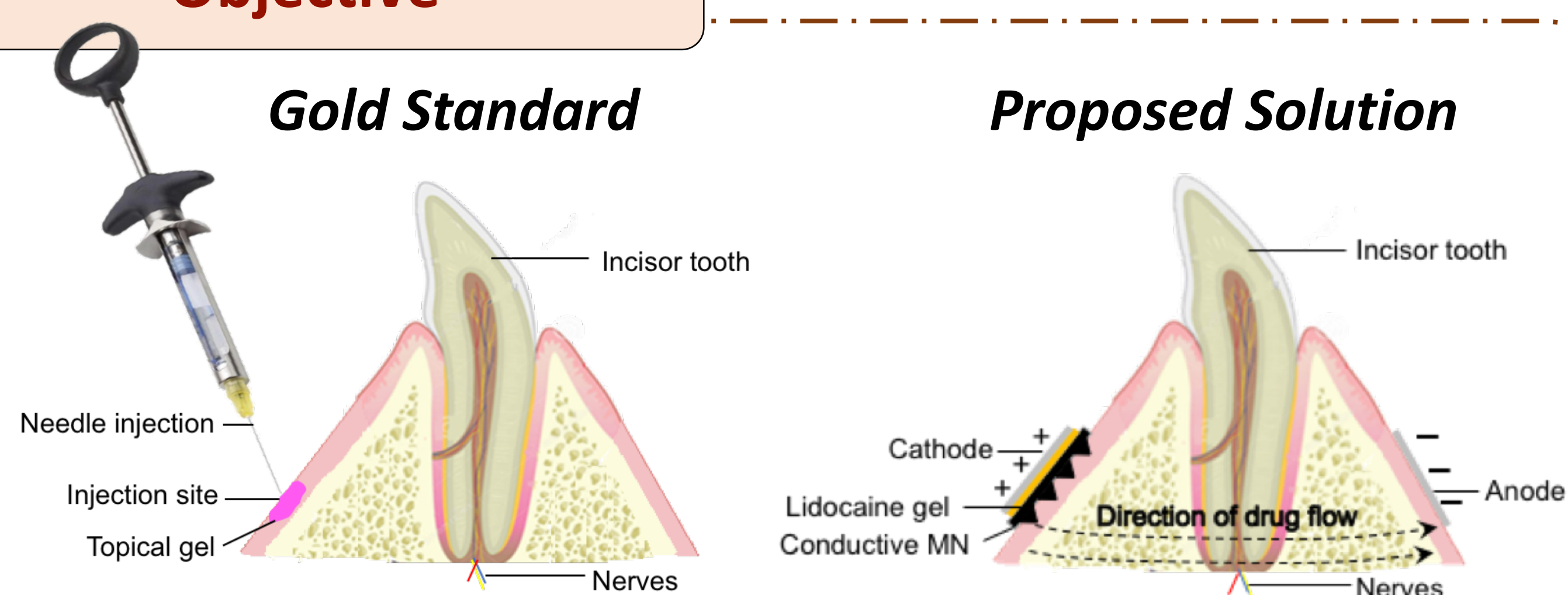


# Non Invasive And Painless Local Anaesthesia In Dentistry

## Background

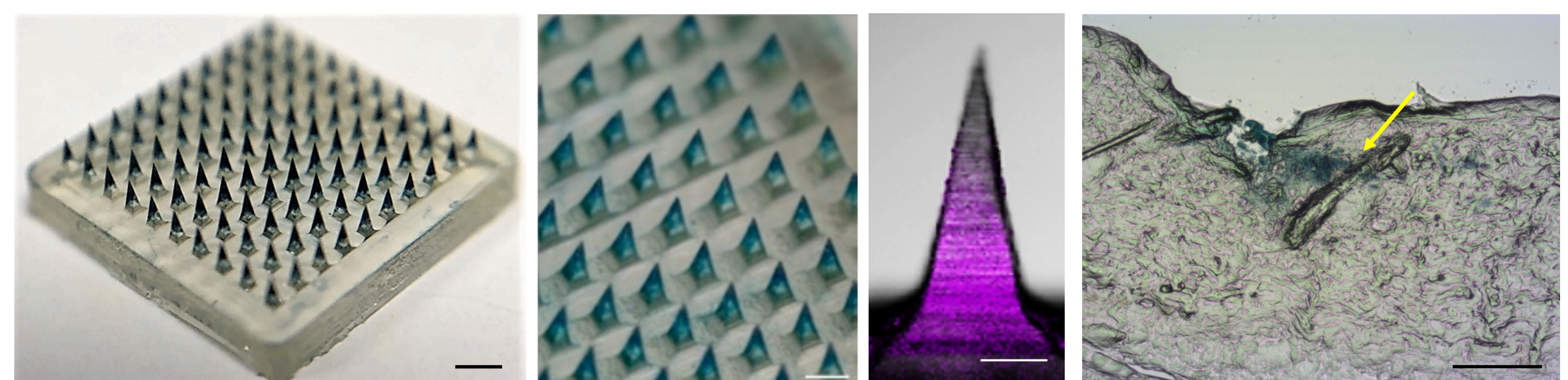
Pain management during dental procedures is a cornerstone for successful everyday practice. In United States alone, over 300 million local anaesthetic cartridges are administered by dentists annually. Current dental practice delivers local anaesthesia using the traditional syringe and needle injections method. However, the appearance of long needles and pain associated with it often lead to anxiety and phobia. This often deters patients from dental visits, which contributes to an increasing oral disease burden.

## Objective



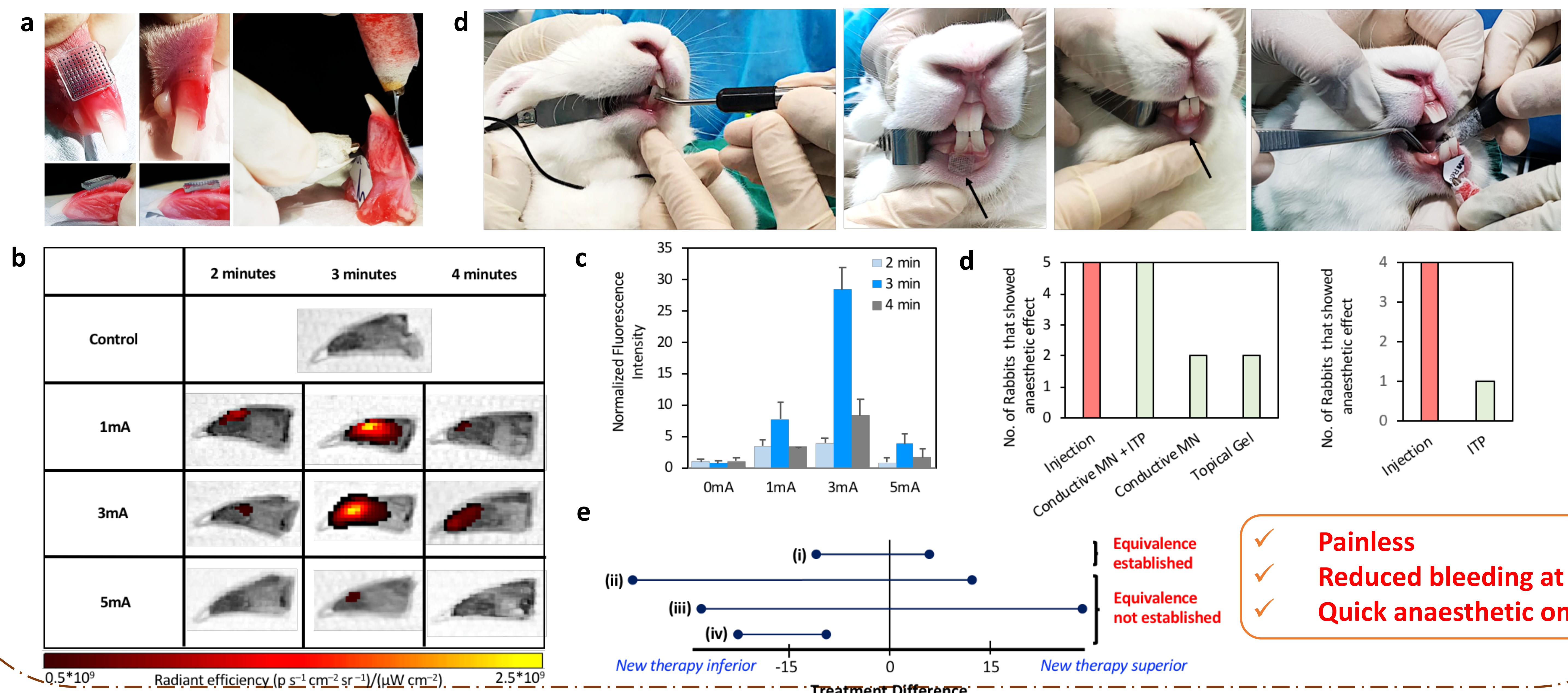
In this programme, we aim to provide a non-invasive, painless and efficient anaesthetic delivery platform for local anaesthesia in dentistry that overcomes the limitations of the existing technologies.

## Design



Microneedles are fabricated to 150-200µm using biocompatible and biodegradable polymers to ensure painless penetration of the oral epithelium without contacting nerve endings in the lamina propria.

## Results



## Conclusion

Our preliminary data of the 1st-generation conductive MN patch, used in combination with iontophoresis, showed almost immediate dental anaesthetic effect in a rabbit model. In addition, the administration of anaesthesia using MN and iontophoresis did not result in any pain for the rabbits compared to the needle injections. **If successfully translated, this innovation is expected to eliminate patients' phobia and improve patient experience of dental anaesthesia delivery.** It will promote patient compliance in seeking timely dental treatments and hence, reduce the nation's oral disease burden. Dentists will also save time spent on behavioural management of phobic patients, hence improving clinic efficiency which also translates to overall cost-savings.