

INTRODUCTION

COVID-19 is changing healthcare, encouraging reductions in face-to-face contact and minimal hospital stay. In England, 82,000 knee replacements are performed annually involving: 4 hospital days¹, 5 outpatient and 6 physiotherapy appointments. Such repeat visits pose an infection risk, are burdensome and financially and environmentally unsustainable.

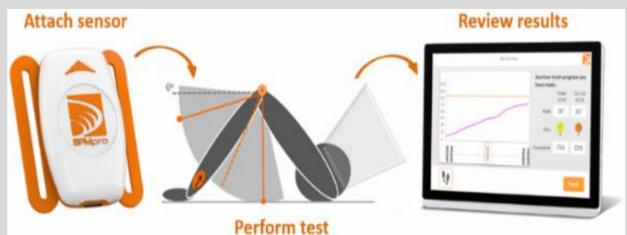
We report on the impact of the implementation of our digital day case pathway, which utilises a BPMpro remote range of motion sensor.

METHODS

The digital pathway, comprising: appointment digitisation/optimisation, use of BPMpathway remote monitoring and anaesthesia/analgesia optimisation. This was introduced to eligible patients requiring knee arthroplasty at a one-stop pre-assessment clinic covering: joint school, meeting with the clinical team, pre- and post-op care planning, BPMpathway training, complete with a pre-habilitation programme prior to surgery.

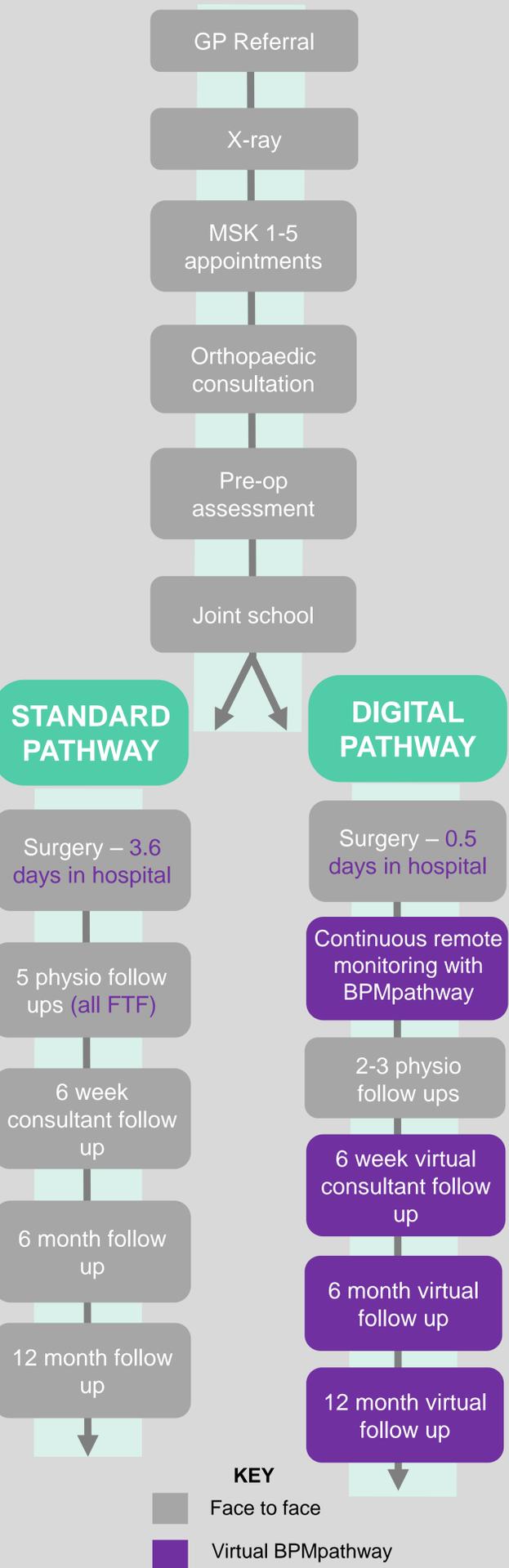
Anaesthesia and analgesia changes included pre-medication, low dose spinal, local anaesthetic wound infiltration and adequate hydration.

Rapid mobility plan on the surgery day included: hemaecue and oral fluids in recovery, early eating and drinking, post-operative x-ray and 2-3 physio sessions on ward to point of use of stairs.



Progress with post-surgery exercise and pain was monitored remotely and patient and physiotherapy teams communicated with each other via the BPMpathway app.

Any additional face-to-face appointments were arranged as per feedback from the remote assessment platform, BPMpathway.

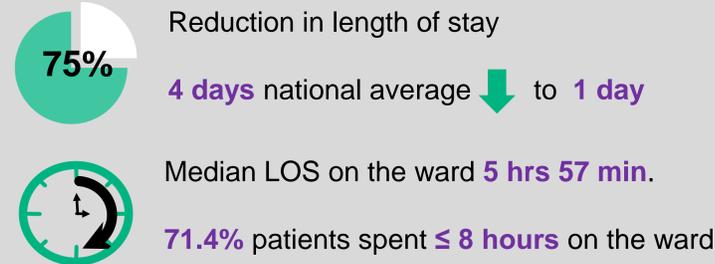


RESULTS: PATHWAY

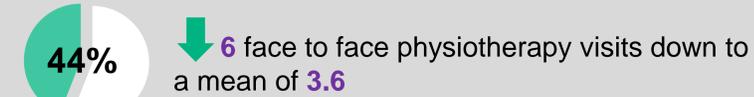
PAIN

Postoperative pain on the day of surgery was a median of 4/10 on a visual analogue scale.

LENGTH OF STAY



PHYSIOTHERAPY



71 physiotherapy visits for 21 patients on digital pathway

126 expected physiotherapy visits for 21 patients on standard pathway – a reduction of 44%

A median of 2.5 community visits per patient

ROM increased over time (fig 1) and with frequency of ROM measurement during rehabilitation, overall compliance (i.e. 3x per day) with ROM measurement, and at least once daily compliance.

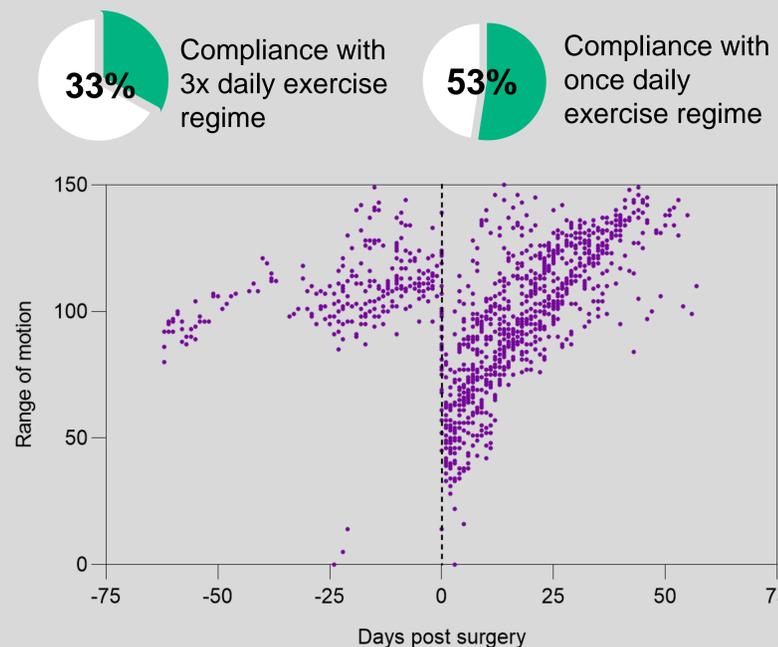


Fig. 1: Range of motion (degrees) by number of days pre- or post-surgery

RESULTS: COSTS

Standard pathway, average LOS was 3.6 bed days (at £485 per day) amounting to £1,746.

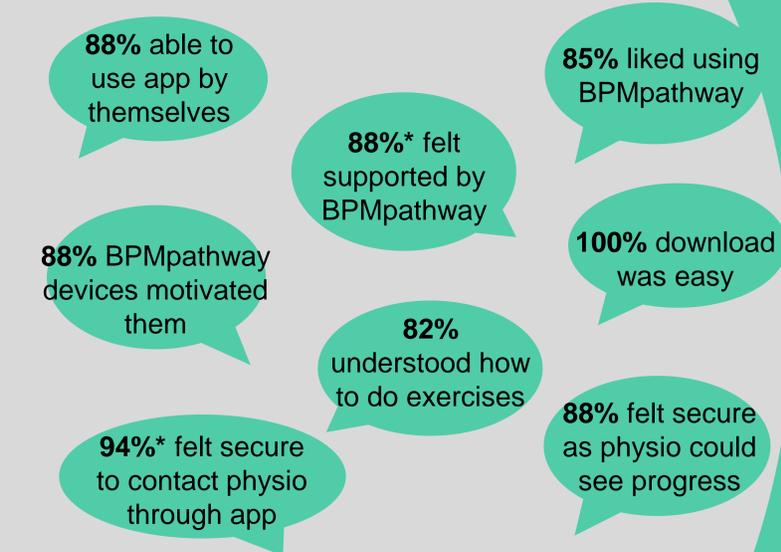
This reduced from £1,746 to £485 by reducing the length of stay to 1 hospital day, saving £1,261 per patient

The national average length of stay is 4 days¹: £1,940.

Physiotherapy appointments (cost £84 each) reduced from 6 to a median of 4, saving £168 per patient

This led to a total saving of £1,429 per patient using BPMpathway.

PATIENT FEEDBACK



CONCLUSION

Implementation of day case and the wearable BPMpro sensor was well received by patients. BPMpathway allowed two-way feedback for monitoring of progress and compliance. The day case pathway, including a wearable BPMpro sensor, could offer system benefits to hospitals, releasing up to 3 bed days patient and reducing the need for multiple home visits, delivering a cost saving to the NHS. Both the reduced length of stay and fewer outpatient appointments could support healthcare services as surgeries are restarted following the COVID-19 pandemic.

References

1.GIRFT (2020) Getting it Right in Orthopaedics: Reflecting on Success and Reinforcing Improvements. Available from <https://gettingitrightfirsttime.co.uk/wp-content/uploads/2020/02/GIRFT-orthopaedics-follow-up-report-February-2020.pdf>

Conflicts of Interest

D. Cooper is employed as a Lead Medical Science Liaison by B. Braun and is a Research Fellow at Sheffield Hallam University. During the collection of data there was no interaction between the clinicians and D. Cooper. All other authors have no conflicts to declare.

BPMpathway is owned and manufactured by 270 Vision Ltd.