

**Evaluation of the impact of
medical and policy reviews in
tackling overtreatment in
musculoskeletal conditions using
a predictive modelling approach**

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Introduction to Bupa

Who are we?

- Global healthcare company – Spain, Chile, New Zealand, Australia, India, Poland, Saudi Arabia
- Globally: 336 clinics, 565 dental centres, 17 hospitals, 453 care homes, 36 optical centres, and 60 retirement villages
- **84,000** people who support our **32 million** customers in **190** countries around the world generating **£9.8bn** revenue in 2015
- UK's largest private medical insurance company

What is our purpose?



Unwarranted Variation

People with the **same medical conditions** sometimes receive different treatment based on the preference or training of the doctor treating them, rather than the clinical evidence or the patient's own preferences.

Our key priorities



No unnecessary surgery



No ineffective treatment



Rates

Medical and policy reviews

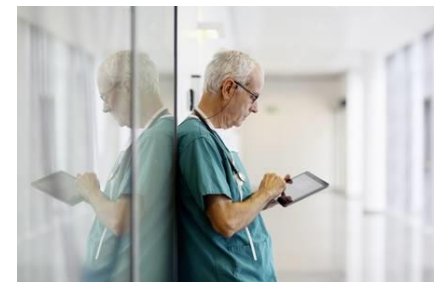
In collaboration with providers **medical and policy reviews have been implemented** for certain procedures where the treatment offered has been identified as deviating from evidence-based medicine or national guidelines.

Our medical and policy reviews cover **condition areas** such as musculoskeletal, cardiology, gastroenterology, dermatology, obstetrics and gynaecology, eye care, and oral surgery.



Reduce unnecessary treatment

Objectives



Policy correctly applied



Appropriate care delivered

Musculoskeletal medical and policy reviews



Spinal injections and injection therapy



Knee arthroscopy

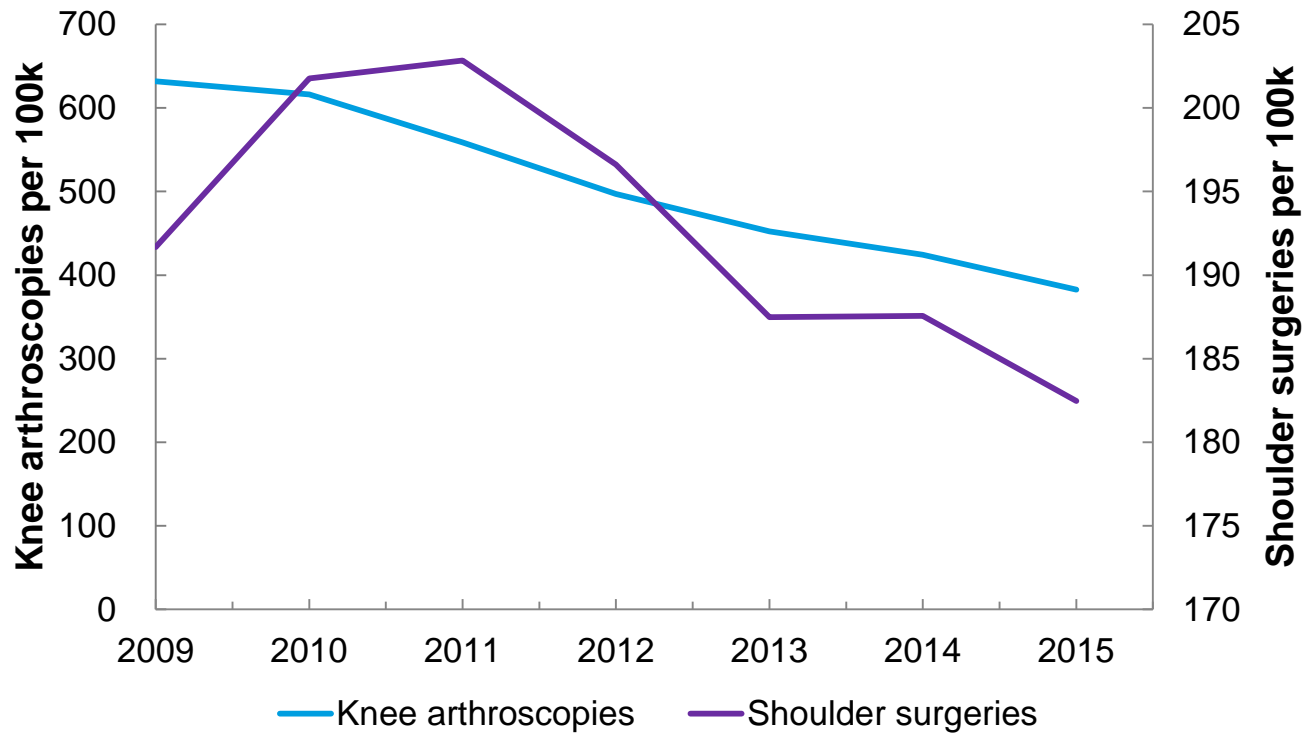


Spinal surgery



Shoulder surgery

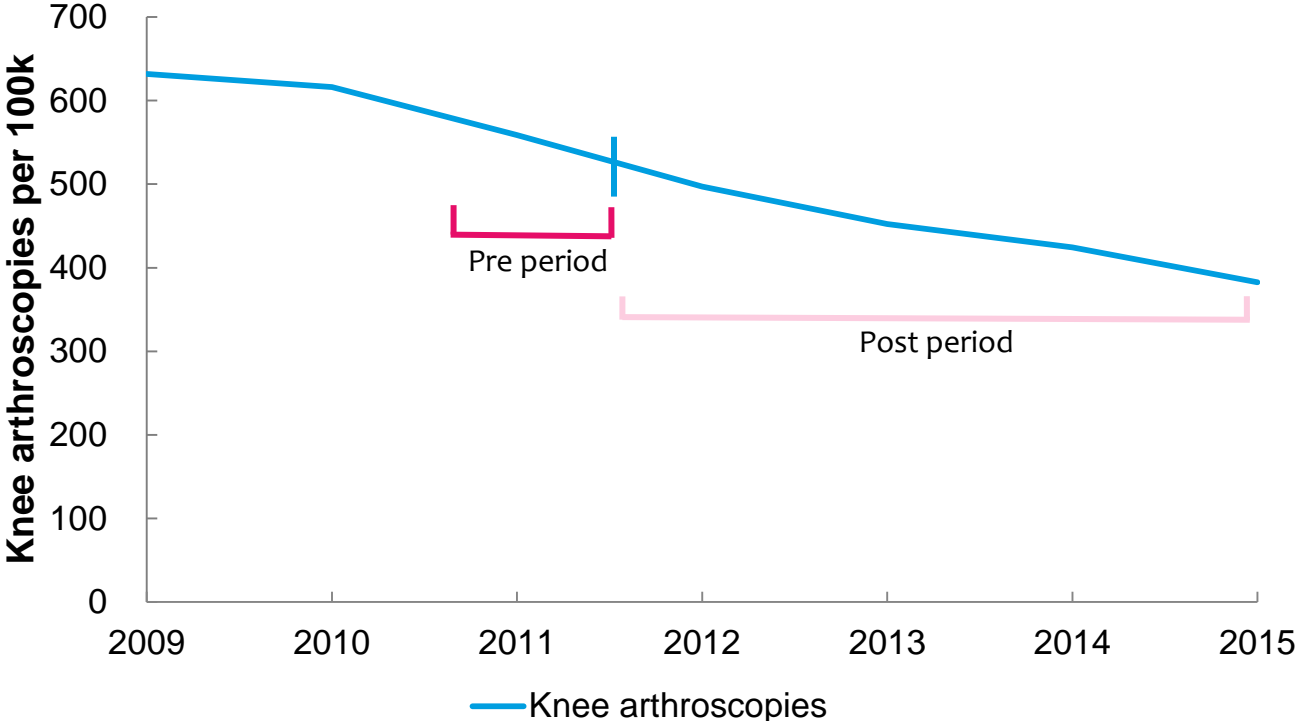
Procedure rates over time targeted by medical reviews



Note: medical reviews began in June 2011 (for knee arthroscopies) and in May 2012 (for shoulder surgeries)

How can we **evaluate** whether the decreasing trend is due to the intervention?

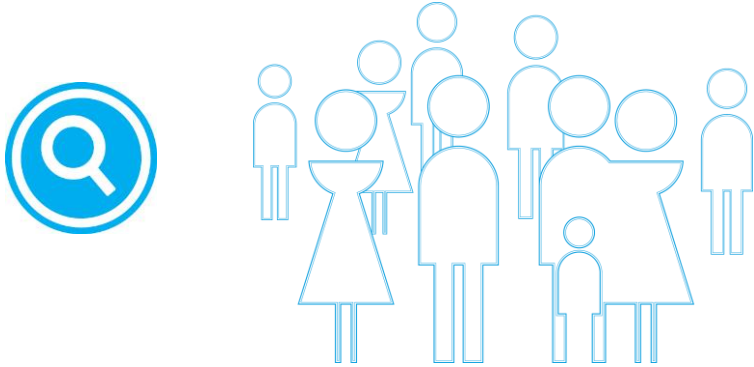
Pre-post approach example



Note: The blue bar marks the start of a medical review



Predictive modelling approach



Eligible population

(eg. members with either knee, spine, or shoulder impairment)



Model development and testing

(24 months before medical review)

Model application



**Medical Review
Introduction**

**Actuals vs.
predicted**



Reasoning of choosing predictive modelling

Benefits

- Predictive modelling as a concept is becoming widely **known** and widely **used** as a data-driven decision making tool in healthcare
- **The predictive model** adjusts for differences in **population demographics** and **claiming behaviour** which can change over time, whereas the **pre-post approach** does not.
- We can adjust the **predictive model** for **other initiatives** that might have an effect whereas the pre-post method cannot be adjusted

Caveats

- Initial **time** and **resource** allocation is needed to **develop** the most optimal model and to **test** its accuracy
- The model needs regular review as there might be some **medical/ technological changes** in the field which mean we need to make an adjustment

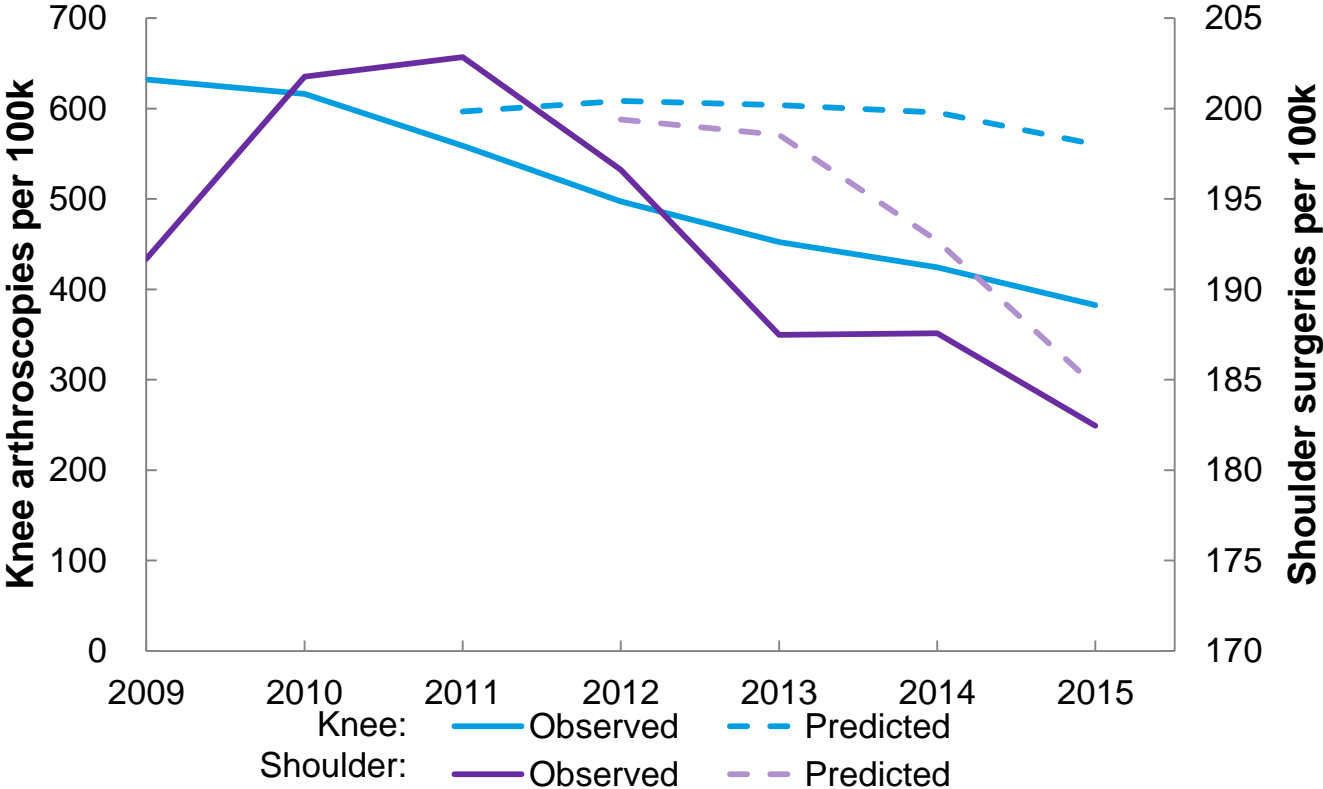
Results

Avoided surgery rates in 2015 per 100K of the population:

188 Knee arthroscopies



10 Shoulder surgeries



Results

Tackling unnecessary treatment resulted in a **5% to 33%** annualised **reduction** in surgery volumes for MSK conditions.

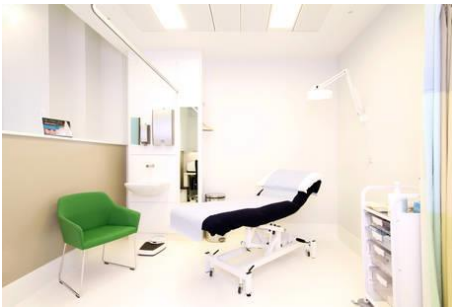
Knee arthroscopies

Shoulder surgeries

Estimated average annual reduction
in volumes

-26%

-8%



Alternative treatment and **support** options are available for our members through our Treatment Option Service, MSK physicians, direct access to physiotherapy etc.

Conclusion

Our **previous approach** did not account for the changes in the case mix and claiming activity, as it assumed the trend to be the same as during the baseline period. This resulted in less accurate estimation of expected number of cases.

The **predictive modelling** approach is the preferred method in **evaluating** the impact of medical and policy reviews due to its **flexibility** which allows us to adjust for differences in:

- population **demographics**
- claiming **behaviour**
- internal changes such as introduction of **other initiatives** which might have a confounding effect on volume of procedures performed



However, even the predictive modelling approach is not perfect and requires regular **review** and **recalibration** over time. This is to account for changes in the medical field which may impact the effectiveness of medical and policy reviews.

Success Story

Case study: Fiona Story* runs a riding school. She was diagnosed with spinal stenosis and surgery was recommended originally. Fiona contacted our Treatment Options Service to help her decide which treatment was right for her.



She said:

“The nurse I spoke to offered me more information about my options and sent me an independent decision aid DVD and booklet. If I had the operation it might have meant a recovery period of up to 4 to 6 months. My work is very important to me and I didn’t like the idea of spending months sitting around and not being active or working. The nurses explained the option of pain management and I was interested in finding out more.

“Pursuing this course of treatment has allowed me to continue to pursue my hobbies, take a holiday I thought I would need to cancel and keep doing the work that I love.”

*The patient has given us consent to share this story



QUESTIONS?

Contact details

If you have any further questions, please feel free to contact me:

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THANK YOU