

Trends in the Uptake of Diagnostic Multi-Parametric MRI of the Prostate With Federal Funding: Australia Population Data

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In recent years, there has been an expanding role for multi-parametric Magnetic Resonance Imaging (mpMRI) in the workup of prostate cancer. There is growing evidence suggesting the utilization of mpMRI increases clinically significant prostate cancer detection and reduces prostate biopsy rates.¹ Furthermore, there are suggestions that mpMRI may help guide the management of patients with prostate cancer.^{2,3} In keeping with this, the European Association of Urology prostate cancer guidelines now strongly recommend that mpMRI should be performed prior to biopsy.⁴

Accordingly, from July 2018, patients in Australia meeting the Medicare Benefits Schedule (MBS) criteria were able to undergo mpMRI with no out-of-pocket fee.⁵ We aimed to assess the uptake of mpMRI and identify discrepancies across different states and patient populations nationwide.

METHODS

From July 2018 to February 2020, data regarding the total number of mpMRI performed in patients with suspected prostate cancer, radical prostatectomy (RP) and prostate biopsy was obtained from the Medicare Australia website.⁶ MBS codes were identified for mpMRI (63541), RP (37210, 37211) and prostate biopsy (37219).⁵ Definitions and eligibility criteria for the respective MBS codes are outlined in Table 1. In particular, the MBS code for mpMRI included both patients who were biopsy naïve as well as patients who had previous negative biopsies. This data is representative of private practice remunerations; although many public hospitals utilise MBS billing, public practice data may not be completely captured by MBS-based data. Data was extracted by month, age range and state. Data were expressed graphically as a 'per month' count for mpMRI and as a ratio of mpMRI:

biopsy and mpMRI:RP, stratified by state and age group. To attempt to account for the temporality of the procedures, the mpMRI:RP denominator was the RP count of the month after mpMRI.

RESULTS

From July 2018 to January 2020, a total of 53287 prostate mpMRI scans were performed in Australia. The total monthly number of mpMRI studies performed ranged from 2066 in January 2019 to 3319 in July 2019. The monthly count of mpMRI were on average almost 20% higher 12 months following reimbursement, however, when divided by the commensurate number of prostate biopsies or prostatectomies, there was no appreciable year-on-year increase.

During the same timeframe there were 10332 RPs and 32864 prostate biopsies. We observed a difference in the ratio of mpMRI to biopsy as well as mpMRI to RP between states (Fig. 1). In Queensland, there were more mpMRI scans per biopsy than for the other states in every month, with the ratio 37% higher on average than the overall statistic. Contrastingly, NSW/ACT mpMRI:biopsy monthly ratios were 10% lower than overall. For the mpMRI:RP measure, states broadly tracked close to the countrywide average through 2019 but WA was on average 22% lower and had the smallest ratio for 14 out of 19 months.

We observed differences in the number of mpMRI performed per biopsy between different age groups (Fig. 2). There were monotonic decreases in the monthly mpMRI:biopsy ratio as age increased with men aged under 55 having 0.70 more mpMRI per biopsy than those aged over 75. The 65-74 group had the least mpMRI per RP of the 4 age groups, 3.0 fewer imaging procedures than men under 55 and 3.1 fewer than men over 75.

DISCUSSION

The increased availability of mpMRI for selecting patients for prostate biopsy has altered the diagnostic pathway for prostate cancer in recent years.⁴ This current study highlights that there has been judicious use of mpMRI in the workup of prostate cancer since the introduction of MBS subsidization. Furthermore, we have observed significant discrepancies in the ratio of mpMRI to RP and prostate biopsy across different states and patient populations.

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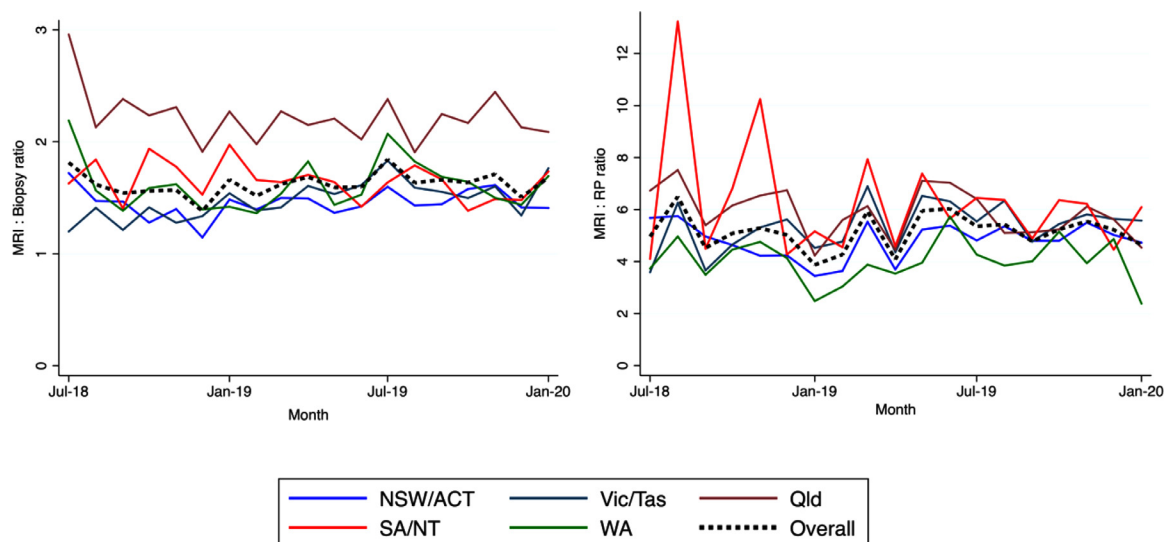
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Table 1. Summary of Medicare Benefits Schedule (MBS) items utilised in the current study [4]

MBS Code	Definition/Criteria
mpMRI	63541 The patient must be suspected of having prostate cancer based on: <ol style="list-style-type: none"> a DRE which was suspicious for prostate cancer; or in a person aged less than 70 y, at least 2 PSA tests performed within an interval of 1-3 mo of greater than 3.0 ng/ml, and a free/total PSA ratio less than 25% or the repeat PSA exceeding 5.5 ng/ml; or in a person aged less than 70 y, whose risk of developing prostate cancer based on family history is at least double the average risk, at least 2 PSA tests performed within an interval of 1-3 mo of greater than 2.0 ng/ml, and a free/total PSA ratio less than 25%; or in a person aged 70 y or older, at least 2 PSA tests performed within an interval of 1-3 mo of greater than 5.5 ng/ml and a free/total PSA ratio less than 25%
Radical Prostatectomy	37210 PROSTATECTOMY, radical, involving total excision of the prostate, sparing of nerves around the bladder and bladder neck reconstruction, not being a service associated with a service to which item 35551, 36502 or 37375 applies.
	37211 PROSTATECTOMY, radical, involving total excision of the prostate, sparing of nerves around the bladder and bladder neck reconstruction, <i>with pelvic lymphadenectomy</i> , not being a service associated with a service to which item 35551, 36502 or 37375 applies.
Prostate Biopsy	37219 PROSTATE, needle biopsy of, using prostatic ultrasound techniques and obtaining 1 or more prostatic specimens, being a service associated with a service to which item 55600 or 55603 applies

PSA, prostate specific antigen.

**Figure 1.** Ratio of mpMRI to prostate biopsy and radical prostatectomy stratified by state. (Color version available online.)

The number of mpMRI performed per biopsy or RP has remained largely stable following the introduction of MBS subsidized mpMRI. We observed an immediate uptake of mpMRI following MBS reimbursement from July 2018. This is likely a reflection that mpMRI had already been embedded in private practice. Furthermore, there has been no upward trend in prostate mpMRI compared to RP and biopsy despite the increased accessibility, suggesting that there has been rational usage of mpMRI in Australia.

The utilization of mpMRI may lead to fewer biopsies in low risk patients. Overall, more mpMRI per biopsy in younger men were observed. This may be attributed to a lower prevalence of prostate cancer and more common, alternative causes for elevated prostate specific antigen (PSA) in this population. Traditionally, these men with raised prostate specific antigen may have immediately undergone prostate biopsy. However, in the present era, these patients may have further workup with mpMRI. In younger, low risk patients, a reassuring mpMRI often

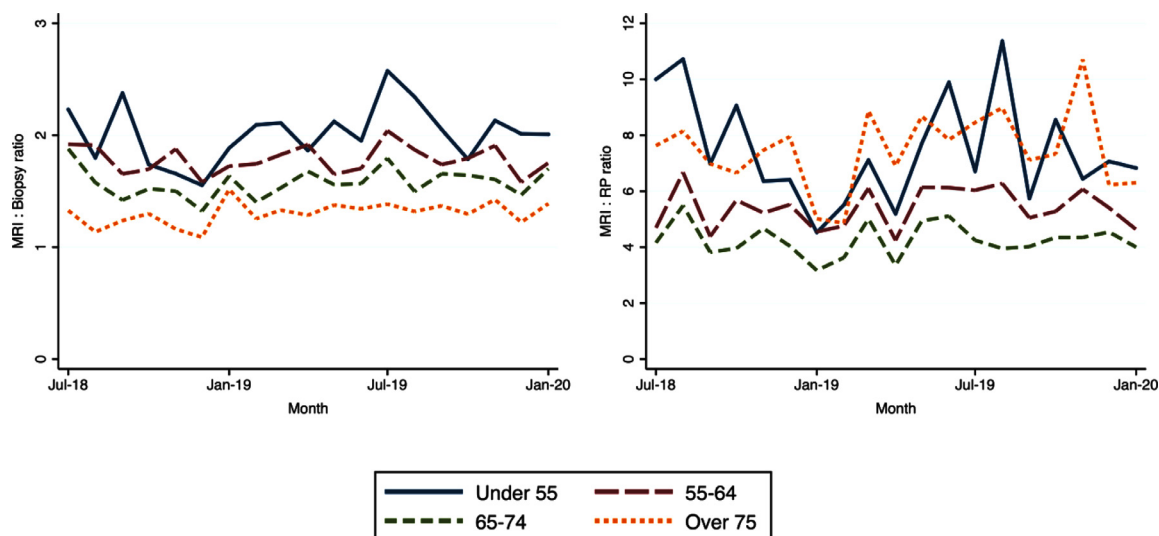


Figure 2. Ratio of mpMRI to prostate biopsy and radical prostatectomy stratified by age group. (Color version available online.)

translates to biochemical monitoring being preferred as an initial option, thus reducing the number of biopsies. This is consistent with previous studies suggesting that mpMRI reduced the proportion of patients undergoing biopsy.¹

The current study found substantial variability in the ratio of mpMRI to RP and prostate biopsy between states. It is unclear why we observed higher rates of mpMRI per RP and biopsy in Queensland despite standardized criteria for mpMRI eligibility. We postulate that potential explanations include variations in urological practice and availability of mpMRI access between states. Accordingly, there is a potential role for further standardization of the utilization of mpMRI in the diagnostic pathway for prostate cancer nationwide.

This study is limited by the use of MBS data and, therefore, whilst it captures private practice, it is not a complete reflection of public practice. However, many public hospitals utilize MBS codes for billing. Furthermore, such data has been utilized and validated in other studies including the assessment of prostate cancer treatment in Australia.⁷

In conclusion, the increased accessibility of mpMRI following the commencement of MBS subsidized mpMRI has not resulted in substantial alteration of mpMRI patterns over the 18 months since this change. The addition of mpMRI to the diagnostic pathway has

likely led to a reduction in biopsies in younger men. Furthermore, regional variations in the rates of mpMRI to RP and biopsy highlights the need for consensus in the usage of mpMRI in the workup of prostate cancer across Australia.

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