NICE National Institute for Health and Care Excellence

Putting NICE guidance into practice

Resource impact report:
Transperineal biopsy for diagnosing prostate cancer (HTG680)

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Summary

NICE has recommended local anaesthetic transperineal (LATP) prostate biopsy using the freehand needle positioning devices PrecisionPoint, EZU-PA3U, Trinity Perine Grid and UA1232 puncture attachment as options for diagnosing prostate cancer.

We estimate that:

- 48,900 people in England with suspected malignant neoplasm of the prostate, who have a Likert score of 3 or more are eligible for LATP biopsy each year. This is equivalent to 86 people per 100,000 population.
- 47,100 people will receive LATP biopsy from year 5 onwards once uptake has reached 95%. This is equivalent to 80 people per 100,000 population. Current uptake is around 80%.

The estimated annual cost of implementing this guidance for the population of England based on the uptake in the resource impact assumptions is shown in table 1. Based on the assumptions used for England, this is equivalent to a cost of around £65,000 and £37,000 in 2026/27 for Wales and Northern Ireland, respectively.

Table 1 Estimated annual cost of implementing the guidance

	Current	2022/ 23	2023/ 24	2024/ 25	2025/ 26	2026/ 27
Uptake rate for transperineal biopsy (%)	80%	83%	86%	89%	92%	95%
Population receiving LATP each year	39,661	41,148	42,636	44,123	45,610	47,098
Resource impact each year for prostate biopsy (cash) (£000s)	N/A	£207	£414	£621	£828	£1,034
Resource impact each year for prostate biopsy capacity impact (non-cash/cash) (£000s)	N/A	£27	£55	£82	£109	£137
Resource impact each year for prostate biopsy total (£000s)	**N/A**	**£234**	**£469**	**£703**	**£937**	**£1,171**
Resource impact each year for adverse events related to prostate biopsy capacity impact (non-cash/cash) (£000s)	**N/A**	**-£8**	**-£16**	**-£24**	**-£32**	**-£40**
Total impact cash (£000s)	N/A	£207	£414	£621	£828	£1,034
Total impact capacity impact (non-cash/cash) (£000s)	N/A	£19	£39	£58	£78	£97
Total resource impact (£000s)	**N/A**	**£226**	**£453**	**£679**	**£906**	**£1,131**

This report is supported by a resource impact template which may be used to calculate the resource impact of implementing the guidance by amending the variables.

This technology is commissioned by integrated care systems. Providers are NHS Hospital trusts.

1 Local anaesthetic transperineal prostate biopsy

1.1 NICE has recommended local anaesthetic transperineal (LATP) prostate biopsy using the freehand needle positioning devices PrecisionPoint as an option for diagnosing prostate cancer.

1.2 The following freehand needle positioning devices are also recommended as an option:

- EZU-PA3U device,
- Trinity Perine Grid
- UA1232 puncture attachment.

1.3 Until recently standard practice for prostate biopsy was local anaesthetic transrectal ultrasound (LA-TRUS). This involves taking samples of prostate tissue by inserting a biopsy needle through the rectal wall via the anus. An alternative is LATP prostate biopsy, which involves inserting the needle through the perineum.

1.4 The evidence suggests no significant difference in cancer detection rates between LATP biopsy and LA-TRUS biopsy. But it suggests lower rates of infection and sepsis, and higher rates of urinary retention and haematuria after LATP biopsies.

1.5 The evidence used to support freehand needle positioning devices is from the PrecisionPoint device. The company says that the PrecisionPoint device is compatible with any biplane TRUS or transperineal probe from any ultrasound manufacturer. The other LATP devices need to be used with specific ultrasound machines.

2 Resource impact of the guidance

2.1 We estimate that:

- 48,900 people in England with suspected malignant neoplasm of the prostate, who have a Likert score of 3 or more are eligible for

LATP biopsy each year. This is equivalent to 86 people per 100,000 population.

- 47,100 people will receive LATP biopsy from year 5 onwards once uptake has reached 95%. This is equivalent to 80 people per 100,000 population. Current uptake is around 80%.

2.2 The current treatment and future uptake figure assumptions are based on clinical expert opinion and are shown in the resource impact template.

2.3 The estimated annual cost of implementing this guidance for the population of England based on the uptake in the resource impact assumptions is shown in table 2. The cost from year 5 once steady state is reached is equivalent to around £2,000 per 100,000 population (see table 3).

Table 2 Resource impact of implementing the guidance using NICE assumptions for the population of England

	Current	2022/ 23	2023/ 24	2024/ 25	2025/ 26	2026/ 27
Uptake rate for transperineal biopsy (%)	80%	83%	86%	89%	92%	95%
Population receiving LATP each year	39,661	41,148	42,636	44,123	45,610	47,098
Resource impact each year for prostate biopsy (cash) (£000s)	N/A	£207	£414	£621	£828	£1,034
Resource impact each year for prostate biopsy capacity impact (non-cash/cash) (£000s)	N/A	£27	£55	£82	£109	£137
Resource impact each year for prostate biopsy total (£000s)	**N/A**	**£227**	**£453**	**£680**	**£906**	**£1,133**
Resource impact each year for adverse events related to prostate biopsy capacity impact (non-cash/cash) (£000s)	**N/A**	**-£8**	**-£16**	**-£24**	**-£32**	**-£40**
Total impact cash (£000s)	N/A	£207	£414	£621	£828	£1,034
Total impact capacity impact (non-cash/cash) (£000s)	N/A	£19	£39	£58	£78	£97
Total resource impact (£000s)	**N/A**	**£226**	**£453**	**£679**	**£906**	**£1,131**

Table 3 Resource impact of implementing the guidance using NICE assumptions per 100,000 population

	Current	2022/ 23	2023/ 24	2024/ 25	2025/ 26	2026/ 27
Uptake rate for transperineal biopsy (%)	80%	83%	86%	89%	92%	95%
Population receiving LATP each year	70	73	75	78	81	83
Resource impact each year for prostate biopsy (cash) (£000s)	N/A	£1	£1	£2	£2	£3
Resource impact each year for prostate biopsy capacity impact (non-cash/cash) (£000s)	N/A	£1	£1	£2	£3	£4
Resource impact each year for prostate biopsy total (£000s)	**N/A**	**£2**	**£2**	**£4**	**£5**	**£7**
Resource impact each year for adverse events related to prostate biopsy capacity impact (non-cash/cash) (£000s)	**N/A**	**£0**	**£0**	**£0**	**£0**	**£0**
Total impact cash (£000s)	N/A	£0	£1	£1	£1	£2
Total impact capacity impact (non-cash/cash) (£000s)	N/A	£0	£0	£0	£0	£0
Total resource impact (£000s)	**N/A**	**£0**	**£1**	**£1**	**£2**	**£2**

2.4 This report is supported by a resource impact template which may be used to calculate the resource impact of implementing the guidance by amending the variables.

Savings and benefits

2.5 The evidence suggests no significant difference in cancer detection rates between LATP biopsy and LA-TRUS biopsy. But it suggests lower rates of infection and sepsis after LATP biopsies, and higher rates of urinary retention and haematuria.

2.6 In TRUS biopsies, the needle passes through the rectum and there is a risk of severe infection including sepsis. Treatment of these infections can be challenging and are not always identified early. NICE NG51 Sepsis: recognition, diagnosis and early management, provides advice on recognition and diagnosis of sepsis.

2.7 Sepsis has significant impact on the health and quality of life for the person, including the potential need for long term care. There are costs associated with the long term care for people with sepsis that are not identified in the template that supports this report. Local organisations are advised to consider the impact of long term care that may be required following sepsis.

2.8 LATP reduces the need for antibiotics to prevent infection and is consistent with good anti-microbial stewardship.

3 Implications for commissioners

3.1 This technology is commissioned by integrated care systems. Providers are NHS Hospital trusts.

3.2 There will be a further move from LA-TRUS to LATP and this will result in lower rates of infection and sepsis after LATP biopsies, and higher rates of urinary retention and haematuria.

3.3 Transperineal biopsy for diagnosing prostate cancer falls within the programme budgeting category 02H Cancer, Urological.

4 How we estimated the resource impact

The population

4.1 Prostate cancer mainly affects people over 50. There are around 71,500 men with suspected malignant neoplasm of the prostate each year.

4.2 Around 66,200 men (92.54%) with suspected malignant neoplasm of the prostate have a multiparametric MRI (mpMRI) prior to a

prostate biopsy, (NICE Prostate cancer: diagnosis and management NG131 Resource impact template).

4.3 Of these people, around 48,000 (72.6%) have a Likert score of 3 or more and would be eligible for a mpMRI-influenced prostate biopsy.

Table 4 Number of people eligible for treatment in England

Population	Proportion of previous row (%)	Number of people
Total population		56,550,138
Adult male population		21,779,298
Men with suspected malignant neoplasm of the prostate[1]	0.33%	71,900
Men having an multiparametric MRI (mpMRI) prior to a prostate biopsy[2]	92.54%	66,500
Men with a Likert score of 3 or more who are offered a mpMRI-influenced prostate biopsy[3]	72.60%	48,000
Total number of people estimated to receive LATP each year from year 5[3]	95.00%	47,100

[1] Source: NICE Prostate cancer: diagnosis and management NG131 Resource impact template

[2] Source: NICE Prostate cancer: diagnosis and management NG131 Resource impact template

[3] Source: Expert clinical opinion

Assumptions

4.4 The resource impact template assumes that:

- 80% of people who currently have a mpMRI-influenced prostate biopsy have LATP (Tamhankar, et al 2020), and in future practice 95% of people will have LATP, the remaining people will have LA-TRUS.
- Expert clinical opinion is that 40% of men will have the PrecisionPoint transperineal access system, 20% will have the FUJIFILM EZU-PA3U, 20% will have Trinity Perine Grid and 20% will have the UA1232 puncture attachment in both current and future practice. It is assumed that uptake of PrecisionPoint

is greater than the other LATP options as it is compatible with any biplane TRUS or transperineal probe from any ultrasound manufacturer, unlike the other devices.

- Following LA-TRUS it is estimated that 3.74% of men have a non-elective admission, 1.12% have an admission for sepsis, 0.31% have an admission for a urinary retention and 0.22% have an admission for haematuria, (Tamhankar et al, 2020).
- Following LATP it is estimated that 3.54% of men have a non-elective admission, 0.42% have an admission for sepsis, 0.95% have an admission for a urinary retention and 0.37% have an admission for haematuria, (Tamhankar et al, 2020).
- Some men having LA-TRUS prostate biopsy also receive anti-biotic prophylaxis to reduce the risk of infection. It is assumed that this administered at 500mg twice daily for 3 days. The proportion of men who receive this can be adjusted in the template based on local practice.
- Some men having LATP prostate biopsy also receive anti-biotic prophylaxis to reduce the risk of infection. It is assumed that this administered once at 500mg. The proportion of men who receive this can be adjusted in the template based on local practice.
- The costs associated with LATP and LA-TRUS are summarised in table 5. Device costs are inclusive of VAT.

Table 5 Unit costs of prostate biopsy and associated adverse events

Description	Cash cost (£)[1]	Capacity impact (non-cash/cash costs) (£)[2]	Total costs (£)
LA-TRUS	97.28	264.52	361.80
LATP PrecisionPoint	370.34	275.10	645.44
LATP EZU-PA3U	152.15	288.18	440.33
LATP Trinity Perine Grid	141.49	287.82	429.31
LATP UA1232 puncture attachment	146.21	288.41	434.62
Non-elective admission[3]		602.00	602.00
Sepsis admission[4]		3,043.53	3,043.53
Urinary retention admission[5]		2,557.60	2,557.60
Haematuria[6]		521.22	521.22
Antibiotic prophylaxis for LA-TRUS[7]	0.41	0	0.41
Antibiotic prophylaxis for LATP[8]	0.07	0	0.07

[1] Cash costs for LA-TRUS and LATP include device and consumable costs include VAT. Device and consumable costs taken from table 65 in the diagnostics assessment report that accompanies this guidance.
[2] Capacity impact for LA-TRUS and LATP from NHS Costs data 2021/22 and include staff costs.
[3] Non-Elective admission is based on 2021/22 NHS Reference costs non-elective short stay (less than two days) HRG - LB76Z Transrectal Ultrasound Guided Biopsy of Prostate
[4] Sepsis admission based on 2021/22 NHS Reference costs Non-Elective: WJ06A-WJ06J (weighted average of short stay and long stay patients)
[5] Urinary retention admission based on 2021/22 NHS Reference cost non-elective short stay: LB09D Intermediate Endoscopic Ureter Procedures, 19 years and over
[6] Haematuria is based on 2021/22 NHS Reference costs non-elective short stay: LB18Z Attention to Suprapubic Bladder Catheter
[7] Ciprofloxacin 500mg twice daily for 3 days
[8] Ciprofloxacin 500mg once

Sensitivity analysis

4.5 Varying the proportion of people having LATP in current practice from 70% to 90% (compared to a baseline of 80%) leads to an estimated cost of between £3,335 and £667 (compared to a baseline cost of £2001) per 100,000 population.

4.6 Varying the proportion of people having LATP in future practice from 90% to 100% (compared to a baseline of 95%) leads to an estimated cost of between £1,333 and £2,668 (compared to a baseline cost of £2,001) per 100,000 population.

4.7 Varying the uptake of the LATP options from current and future practice from equal 25% share of uptake for all the comparators, to baseline where PrecisionPoint has 40% of uptake and EZU-PA3U, Trinity Perine Grid and UA1232 puncture attachment all have 20% each. This leads to an estimated cost of between £1,585 and £4,217 per 100,000 population.

About this resource impact report

This resource impact report accompanies the NICE guidance on Transperineal biopsy for diagnosing prostate cancer and should be read with it.