Estimating lost life-years and quality-adjusted life-years of undertreatment of patients with renal cell carcinoma and metastatic pancreatic cancer in England

HPR71

Berdunov V,[1] Hughes R,[1] Smith M[2]

[1]Thermo Fisher Scientific, London, UK; [2]Thermo Fisher Scientific, Waltham, MA, USA

Background

- The National Cancer Audit Collaborating Centre (NATCAN) combines audits across a range of cancer indications on behalf of NHS England. Recently published results from NATCAN audits have identified significant proportions of patients not receiving the current treatments recommended by the National Institute for Health and Care Excellence (NICE).
- The shortfall in treatment uptake may be partly explained by patient suitability and/or preferences; however, these factors collectively do not sufficiently explain the observed shortfall.

NATCAN audits reporting data since 2024:[1-7]

- National Kidney Cancer Audit (renal cell carcinoma)
- National Ovarian Cancer Audit (epithelial ovarian cancer)
- National Non-Hodgkin Lymphoma Audit (high-grade lymphoma)
- National Pancreatic Cancer Audit (pancreatic cancer)
- National Bowel Cancer Audit (colon cancer)
- National Lung Cancer Audit (non-small cell lung cancer)
- National Oesophago-Gastric Cancer Audit (gastric cancer)

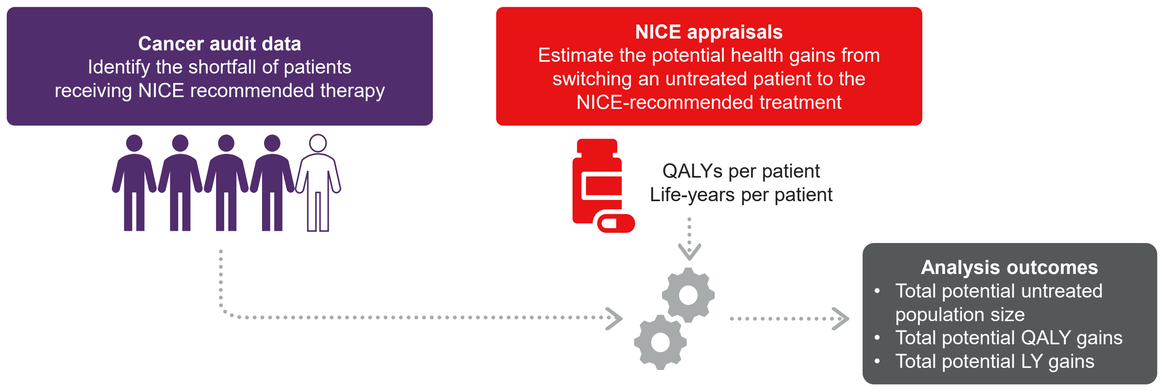
Objectives

- **This study explored the impact of undertreatment and estimated the potential lost health in two case study indications.**

Methods

- The study design is summarised in **Figure 1**.
- Eight NHS England-commissioned audits published since 2024 (details above) were reviewed to identify key cancer indications where the underutilisation of recommended chemotherapy could not be fully explained by preferences or treatment unsuitability.
- Two case studies (metastatic renal cell carcinoma [mRCC] and metastatic pancreatic cancer [mPC]) were selected to explore the impact of the potential care shortfall. The case studies were selected based on the high proportion of undertreated patients reported in the audits, availability of recommended systemic therapies with proven efficacy, and lack of other curative treatment options that could explain the low uptake of systemic chemotherapy.

Figure 1. Study design and key sources



Abbreviations: NICE = National Institute for Health and Care Excellence; LY = life-year; QALY = quality-adjusted life-year

- The size of the patient population and the estimated undertreated population were informed using the NATCAN audit data.
  - It was assumed that all identified untreated patients would be eligible for systemic anti-cancer treatment to assess the maximum possible benefit from increased treatment uptake.
- The potential loss in life-years (LYs) and quality-adjusted life-years (QALYs) from underutilisation was estimated by comparing outcomes for NICE-recommended therapies with expected outcomes for untreated patients.
- A major challenge was an absence of placebo-controlled trials to inform outcomes for untreated patients; therefore, these outcomes were proxied using the treatment option with the lowest health outcomes reported in relevant NICE appraisals.
- For mPC, this was a comparison of approved treatments (nab-paclitaxel+gemcitabine and FOLFIRINOX) with gemcitabine monotherapy, and for mRCC, a comparison to sunitinib. This is a conservative approach, because outcomes for patients on active treatment are assumed to be at least as good as for untreated patients.
- The results were subject to substantial uncertainty, and conservative assumptions were used where possible. Scenario analyses explored alternative assumptions (**Table 1**).

Table 1. Summary of scenario analyses

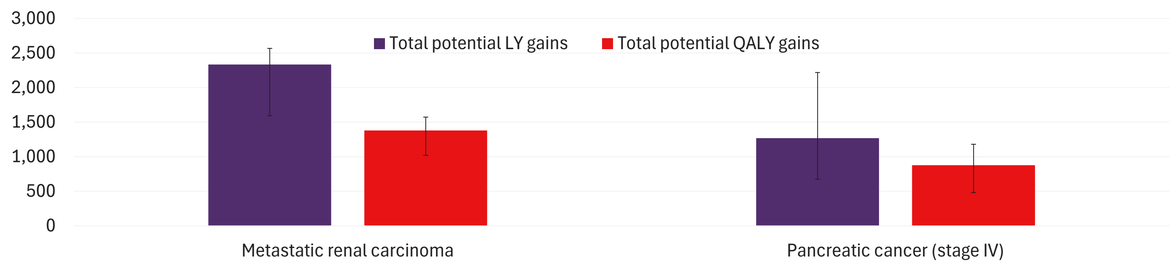
Scenario	Change	Rationale
mRCC		
Patients are considered intermediate/poor risk	Outcomes for the intermediate/high-risk population were used for the calculations	Higher-risk patients may be considered less suitable for treatment, and therefore, the undertreated patients may be predominantly higher risk
Intermediate/poor-risk patients treated with pembrolizumab + lenvatinib	Pembrolizumab + lenvatinib was used as a comparator option for the intermediate/poor-risk population	Within the NICE appraisal pembrolizumab + lenvatinib was included as a treatment option only for the intermediate/poor risk population
Patients treated with tivozanib as a comparator	Tivozanib was also tested as a potential alternative comparator	Tivozanib was estimated to have lower expected health outcomes than sunitinib, but is less commonly used in practice
mPC		
All patients treated with nab-paclitaxel + gemcitabine	Scenario considered all patients switching from gemcitabine to nab-paclitaxel + gemcitabine	In the base case, nab-paclitaxel+gemcitabine and FOLFIRINOX were weighed according to market shares reported in TA476,[8,9] the scenarios tested using each of these individually
All patients treated with FOLFIRINOX	Scenario considered all patients switching from gemcitabine to FOLFIRINOX	
5-FU used as comparator instead of gemcitabine mono	5-FU used as a treatment comparator, as opposed to gemcitabine	5-FU was estimated to have lower health outcomes than gemcitabine; however, it is not commonly used in practice

Abbreviations: 5-FU = 5-fluorouracil; mPC = metastatic pancreatic cancer; mRCC = metastatic renal cell carcinoma; NICE = National Institute for Health and Care Excellence

Results

- An estimated 3,319 and 2,509 patients could potentially benefit from chemotherapy annually for mPC and mRCC, respectively. Base-case and scenario results are presented in **Figure 2** to **Figure 4** and in **Table 2**.
- For the mRCC indication, applying the inputs for the intermediate/poor risk resulted in a reduction in both LYs and QALYs gained. The use of pembrolizumab + lenvatinib, as opposed to nivolumab + ipilimumab, produced a greater QALY gain, but lower LY gain. Using tivozanib produced greater gains for both LYs and QALYs.
- For the mPC indication, the results were highly sensitive to the assumption of which chemotherapy would be used for the increased uptake. Applying inputs for 5-fluorouracil instead of gemcitabine as the proxy for untreated patients resulted in significantly increased LYs gained and a modest increase in QALYs gained.

Figure 2. Total potential LY and QALY gain from full treatment uptake



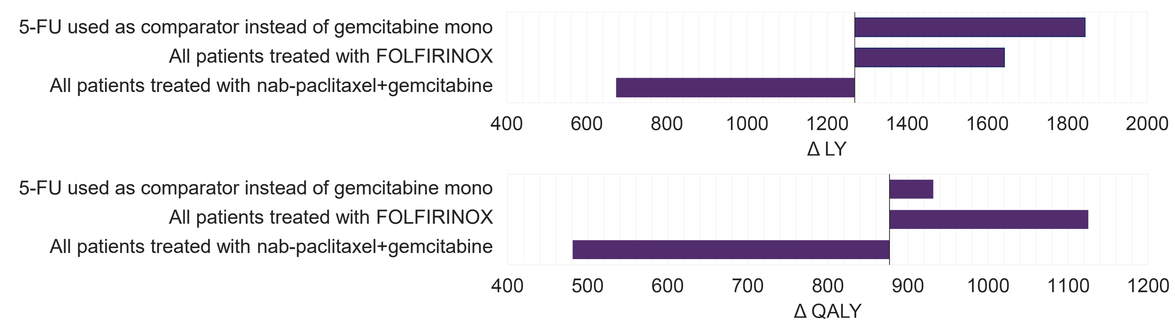
Note: error bars represent the plausible range; Abbreviations: LY = life-year; QALY = quality-adjusted life-year

Table 2. Base-case results for case studies

Outcome	mRCC	mPC
N	3,319	2,509
LY gains per patient	0.93 (0.64–1.02)	0.38 (0.20–0.67)
QALY gains per patient	0.55 (0.41–0.63)	0.26 (0.15–0.36)
Total LY gains	2,333 (1,593–2,567)	1,269 (674–2,218)
Total QALY gains	1,380 (1,019–1,573)	877 (481–1,180)

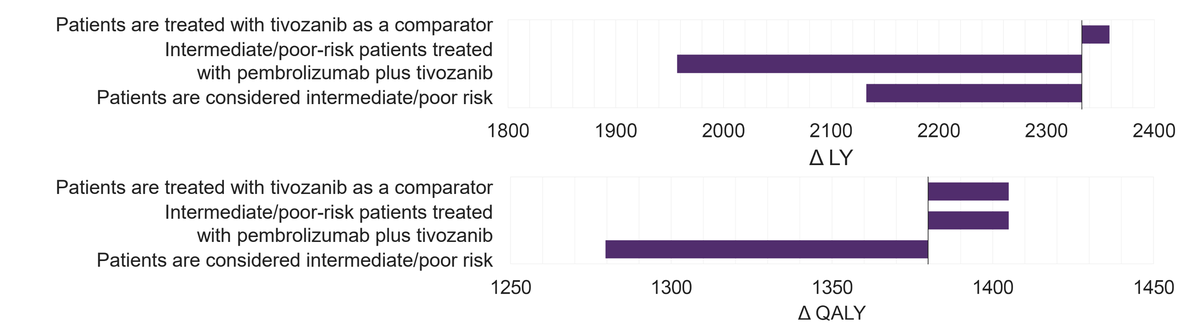
Note: Estimates in brackets represent the plausible range representing uncertainty in the underlying inputs and assumptions.
Abbreviations: LY = life-year; mPC = metastatic pancreatic cancer; mRCC = metastatic renal cell carcinoma; QALY = quality-adjusted life-year

Figure 3. Scenario analysis results for mPC



Abbreviations: LY = life-year; mPC = metastatic pancreatic cancer; QALY = quality-adjusted life-year

Figure 4. Scenario analysis results for mRCC



Abbreviations: LY = life-year; mRCC = metastatic renal cell carcinoma; QALY = quality-adjusted life-year

Conclusions

- **Underutilisation of recommended treatments significantly impacts health outcomes, though full uptake in clinical practice is unlikely, and transferability to other indications is uncertain. Further research is warranted.**
- **The lack of placebo-controlled trials necessitated conservative assumptions for systemic therapy and proxies for untreated outcomes. Scenario analyses showed significant health gains even with alternative treatment mix scenarios, in some cases exceeding base-case LYs and QALY gains.**
- **It was assumed that the untreated patient characteristics were aligned with those in the clinical trial populations. This assumption was tested with higher-risk mRCC data, showing minimal impact on health gains estimates.**
- **Our results are consistent with substantial research showing that the development of clinical practice guidelines alone does not necessarily translate into changes in clinical practice behaviour or improved patient outcomes but may require specific strategies to facilitate their uptake and adoption into clinical care.**

References

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Disclosures

VB and **RH** are employees of PPD™ Evidera™ Health Economics & Market Access, Thermo Fisher Scientific. **MS** was employed by Thermo Fisher Scientific at the time this study was conducted. This poster was funded by Thermo Fisher Scientific.

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