Kidney Cancer

Essential Research Priorities in Renal Cancer: A Modified Delphi Consensus Statement

Sabrina H. Rossi\textsuperscript{a,1}, Christopher Blick\textsuperscript{b,1}, Catherine Handforth\textsuperscript{c,1}, Janet E. Brown\textsuperscript{c,1}, Grant D. Stewart\textsuperscript{a,*,1}, on behalf of the Renal Cancer Gap Analysis Collaborative

\textsuperscript{a} Department of Surgery, University of Cambridge, Addenbrooke's Hospital, Cambridge Biomedical Campus, Cambridge, UK; \textsuperscript{b} Harold Hopkins Department of Urology, Royal Berkshire Hospital, Reading, UK; \textsuperscript{c} Academic Unit of Clinical Oncology and Cancer Clinical Trials Unit, Weston Park Hospital, University of Sheffield, Sheffield, UK

\textbf{Article info}

\textbf{Article history:} Accepted January 22, 2019

\textbf{Associate Editor: Richard Lee}

\textbf{Keywords:} Consensus statement Delphi survey Research priorities Renal cell carcinoma

\textbf{Abstract}

\textbf{Background:} Identification of clear and focused research priorities is crucial to drive research forward.

\textbf{Objective:} To identify research priorities in renal cell carcinoma (RCC) through a multidisciplinary collaboration between clinicians, researchers, and patients.

\textbf{Design, setting, and participants:} In phase I, 44 RCC experts provided 24 literature reviews within their field, summarising research gaps (RGs). Three expert discussion meetings and patient interviews were performed, and 39 potential RGs were identified. In phase II, experts (N = 82) scored these gaps on a nine-point scale (1–3: not important; 4–6: important; 7–9: critical) through a multistep Delphi process involving three online surveys and two further consensus meetings. The surveys aimed to reach a consensus, defined as $\geq$70\% agreement by experts.

\textbf{Outcome measurements and statistical analysis:} Three iterations of the Delphi survey were performed. The results obtained after the third Delphi survey were distributed amongst the RCC experts and patient representatives for final feedback.

\textbf{Results and limitations:} In the first Delphi survey, the response rate was 56\% (46/82), increasing to 67\% (55/82) and 71\% (58/82) in the second and third iterations, respectively. Survey respondents included 45.7\% urologists, 37.0\% oncologists, 8.7\% radiologists, and 8.6\% other specialists (pathologists, health economists, geneticist, and scientists). The process resulted in the identification of 14 crucial RGs, across a broad range of RCC themes. Key themes included further research into systematic therapies for RCC and management strategies that maximise quality of life, especially in patient groups that are "difficult to treat" and have rarer RCC subtypes. Two crucial RGs relate to biomarkers and novel imaging approaches for both localised and metastatic disease, to enable prognostic risk stratification and individualise patient management. Study participants were from a UK and European setting; therefore, we acknowledge that the RGs identified represent European priorities.

\textbf{Conclusions:} These RGs will facilitate international collaboration towards a concerted attempt to improve patients' survival and quality of life.

\textsuperscript{1} These authors are joint first authors.

\textsuperscript{*} These authors are joint senior authors.

\textsuperscript{1} Corresponding author. Department of Surgery, University of Cambridge, Addenbrooke's Hospital, Cambridge Biomedical Campus, Cambridge, UK. Tel.: +44 0 1223 245151. E-mail address: gds35@cam.ac.uk (G.D. Stewart).
1. Introduction

Renal cell carcinoma (RCC) is the ninth most common cancer in men and 14th most common cancer in women worldwide [1]. Although incidence rates are rising, most likely due to a combination of an increase in the common risk factors for RCC and increased incidental detection, mortality rates remain static [2]. In an era of limited economic resources, it is crucial to focus spending on research priorities that are meaningful to patients and that are likely to make an impact. RCC has previously been identified as a “Cinderella” site, with low research spending compared with a high burden of the disease [3]. The identification of clear and focused research priorities is crucial to drive research forward. This is exemplified by a highly successful initiative that identified key research gaps (RGs) in breast cancer and has paved the way for similar reviews in other disease areas, including colorectal cancer [4–6]. The Delphi process, a multistage iterative approach that aims to achieve agreement amongst individuals, has undergone several modifications in the literature and has evolved as a structured way to achieve consensus [7]. The aim of this consensus statement was to identify key research priorities in RCC by adopting a comprehensive, systematic methodology and establishing a multidisciplinary collaboration between patients, clinicians, scientists, and researchers.

2. Patients and methods

Potential RGs were identified in phase I. In phase II, RGs were scored using a Delphi survey to achieve group consensus (Fig. 1). Design and reporting adhered to published guidelines [7].

2.1. Panel selection

In phase I, a purposive sample of key opinion leaders in RCC (N = 44) were identified by the steering group (N = 5) via the National Cancer Research Institute (NCRI) Renal Clinical Studies Subgroup and Renal Cross Channel Group (Supplementary material, Box 1). Key opinion leaders comprised an international multidisciplinary group of specialists from five different European countries (UK, Portugal, France, Sweden, and the Netherlands) represented within the Renal Cross Channel Group. We excluded individuals who were conflicted as they had been involved in similar evaluations of research needs in RCC in the past, to avoid bias towards the results of those analyses. In phase II, in addition to the individuals involved in the first phase, a purposive sample of multidisciplinary individuals was identified via the NCRI Renal Clinical Studies Subgroup and extended networks (N = 82).

2.2. Defining RGs

In phase I, experts were invited to submit literature reviews summarising the current knowledge in RCC, key RGs, and how these could be filled for themes spanning all aspects of RCC research. The themes comprised 24 chapters, highlighting 109 RGs (Supplementary Tables 1 and 2) [2,8–14]. The chapters were discussed systematically amongst a multidisciplinary group of experts and patient representatives during three consensus meetings (two face-to-face meetings and one via teleconference), and 39 key RGs were identified to be included in the Delphi survey.

Patient summary: We formed a collaboration between researchers, clinicians, and patients to identify research priorities in kidney cancer. We identified 14 priorities that will improve patient outcomes by focusing on research efforts.

© 2019 European Association of Urology. Published by Elsevier B.V. All rights reserved.
2.3. Patient involvement

Chapters were summarised in plain English, and these were distributed to a group of patients with metastatic and nonmetastatic RCC, facilitated by the charity Kidney Cancer UK. Small group discussions were held with patients, in addition to detailed one-on-one patient interviews, to identify RGs. Patient representatives also participated in the consensus meetings with the RCC experts (Fig. 1).

2.4. Modified Delphi survey

2.4.1. Survey design
The second phase of the project consisted of a modified Delphi survey [7]. The final selection of RGs included in the first Delphi survey was based on patient feedback and the consensus meetings from phase I.

The survey was designed using the Qualtrics software (Qualtrics, Provo, UT, USA), and a pilot study was performed to ensure clarity and feasibility (pilot study, N = 3). In the first iteration, 39 RGs were presented. Participants were asked to score each RG on a nine-point scale regardless of their area of expertise (1–3: not important; 4–6: important; 7–9: critical), as previously described [15]. The aim of the survey was to reach consensus, defined as >70% agreement by experts [16]. RGs that achieved a consensus were removed from subsequent iterations. Experts could add RGs that they believed might have been missed from the survey, and these were included in subsequent iterations.

Three iterations of the Delphi survey were performed. In the second and third surveys, each RG was presented, along with a summary of the scores given in the previous round, that is, the proportion of participants who scored the RG as not important, important, and critical [15,16]. Participants were advised to use this feedback to rescore each RG. Any remaining discrepancies amongst experts following the third iteration were resolved by the study steering group in a consensus meeting.

2.4.2. Survey administration
Participants were contacted by e-mail and were given approximately 2 weeks to complete the survey. Regular e-mail reminders were sent. Experts were invited to participate in the surveys irrespective of whether they had participated in earlier rounds. All data collection was anonymous.

2.4.3. Survey analysis
For each survey iteration, we present the proportion of individuals who scored each RG as not important, important, and critical. Results of the first Delphi survey were analysed separately for urologists and oncologists, to assess differences in prioritisation of research needs in the two groups prior to individuals obtaining feedback from other experts (as was the case for the second and third surveys).

2.4.4. Feedback
Following each consensus meeting, summaries were circulated via e-mail to experts. Following the third Delphi survey, the results were distributed amongst the RCC experts and patient representatives to enable final feedback.

3. Results

3.1. Study participants

In phase I, 44 experts submitted 24 literature reviews (Supplementary material, Box 1). Box 1 summarises RGs identified by patients through group discussions and in-depth interviews. In the first Delphi survey, the response rate was 56% (46/82), increasing to 67% (55/82) and 71% (58/82) in the second and third iterations, respectively. In the first survey, the participant breakdown was as follows: 45.7% urologists, 37.0% oncologists, 8.7% radiologists, and 8.6% other specialists (pathologists, health economists, geneticist, and nonclinical scientists). Broadly, there were similar proportions of participants from each predominant speciality in the second and third iterations (45.5% urologists and 38.2% oncologists, and 44.8% urologists and 41.4% oncologists, respectively).

3.2. Survey results

Thirty-nine RGs were included in the first Delphi survey. Supplementary Table 3 summarises the scores achieved for each RG during each survey iteration. Overall, 14 RGs were considered crucial by >70% of experts (Table 1). In the first round, four crucial RGs were identified and removed from subsequent iterations. Therefore, the second survey
Table 1 – The 14 critical research priorities identified by this initiative, along with scores achieved during each Delphi survey iteration.

<table>
<thead>
<tr>
<th>Research gap</th>
<th>1st survey</th>
<th>2nd survey</th>
<th>3rd survey</th>
</tr>
</thead>
<tbody>
<tr>
<td>Develop targeted therapies and immunotherapies: selecting the right therapy, combination of therapies and optimal therapeutic sequence for individual patients</td>
<td>Not important</td>
<td>Important</td>
<td>Critical</td>
</tr>
<tr>
<td>Identify biomarkers and comprehensive gene profiling to aid prognostic stratification and enable personalised patient management in metastatic RCC</td>
<td>Not important</td>
<td>Important</td>
<td>Critical</td>
</tr>
<tr>
<td>Evaluate the role of immunotherapeutic agents and immune-oncology combinations as neoadjuvant and adjuvant therapies</td>
<td>Not important</td>
<td>Important</td>
<td>Critical</td>
</tr>
<tr>
<td>Evaluate the role of surgical, radiotherapy, and ablation-based treatments for oligometastatic disease, and assess impact on survival</td>
<td>Not important</td>
<td>Important</td>
<td>Critical</td>
</tr>
<tr>
<td>Identify an inexpensive, highly sensitive, and specific biomarker/tool to enable early diagnosis and screening for RCC</td>
<td>Not important</td>
<td>Important</td>
<td>Critical</td>
</tr>
<tr>
<td>Develop research into the management of patients with rarer RCC subtypes, including non–clear cell subtypes, in all stages (localised disease to metastatic RCC)</td>
<td>Not important</td>
<td>Important</td>
<td>Critical</td>
</tr>
<tr>
<td>Develop research into the quality of life of patients with metastatic RCC: impact of toxicity of targeted therapies and follow-up/surveillance protocols and methods to maximise quality of life</td>
<td>Not important</td>
<td>Important</td>
<td>Critical</td>
</tr>
<tr>
<td>Develop and validate imaging response criteria that better reflect the response to targeted therapies and immunotherapy for metastatic RCC</td>
<td>Not important</td>
<td>Important</td>
<td>Critical</td>
</tr>
<tr>
<td>Develop more reliable and readily available biomarkers for immunohistochemistry that may be applied to small biopsy samples (diagnostic, predictive, and prognostic utility) to evaluate and overcome tumour molecular heterogeneity</td>
<td>Not important</td>
<td>Important</td>
<td>Critical</td>
</tr>
<tr>
<td>Evaluate the role of immunotherapy in difficult-to-treat groups: patients resistant to first-line therapy and patients with contraindications to immunotherapy, poor performance status, advanced age, and multiple comorbidities</td>
<td>Not important</td>
<td>Important</td>
<td>Critical</td>
</tr>
<tr>
<td>Investigate new imaging approaches to improve diagnosis/characterisation of incidentally detected small renal masses</td>
<td>Not important</td>
<td>Important</td>
<td>Critical</td>
</tr>
<tr>
<td>Develop biomarkers to enable risk stratification/aid management decisions in localised RCC</td>
<td>Not important</td>
<td>Important</td>
<td>Critical</td>
</tr>
<tr>
<td>Evaluate the natural history of small renal masses to enable the development of an evidence-based active surveillance protocol</td>
<td>Not important</td>
<td>Important</td>
<td>Critical</td>
</tr>
<tr>
<td>Identify risk prediction models/prognostic scores that will allow evidence-based follow-up protocols following curative treatment of localised RCC</td>
<td>Not important</td>
<td>Important</td>
<td>Critical</td>
</tr>
</tbody>
</table>

RCC = renal cell carcinoma.

contained 35 RGs: ≥70% experts agreed that five RGs were critical and nine were important. An additional 10 RGs were considered important rather than critical, as ≥70% experts scored them as important or not important combined (Supplementary Table 1). One additional RG was added following the second survey. As a result, 11 RGs were included in the third iteration: ≥70% experts scored five RGs as critical and two RGs as important. Four RGs did not achieve a consensus amongst the experts. These were discussed by the steering committee, and in all four cases, the RGs were deemed important but not critical. Overall, none of the RGs were considered unimportant. Although all four critical RGs identified in the first survey were pertinent to advanced disease, the 14 critical RGs identified overall were noted to be evenly distributed across RCC themes (Fig. 2). The results were presented to a group of patients with RCC, and they agreed that the top 14 RGs identified by the Delphi process adequately reflect patient needs.

3.3. Comparisons amongst expert subgroups

Analysing the results of the first Delphi survey for the urologists and oncologists separately, it was noted that the two groups scored RGs very similarly. The four RGs that
were considered to be the most crucial in the first Delphi survey achieved a consensus when analysing results from urologists and oncologists independently. However, discrepancies were noted in six other RGs (Table 2). In four cases, the urologists but not the oncologists scored the RGs as critical, whereas in one case, the oncologists but not the urologists scored the RG as critical. In all five cases, a consensus was achieved in the second or third survey, and the RGs were ultimately scored as critical. In the final case, consensus was not achieved. The RG in question was the following: “Develop evidence-based guidelines regarding follow-up/surveillance in metastatic RCC, including patient preferences and economic implications”. Despite being pertinent to metastatic disease, in the first round, this was deemed critical by 71.43% of urologists but only by 37.50% of oncologists. Analysing data from both clinician groups combined, 58.18% and 52.46% of experts deemed this RG to be critical in the second and third surveys, respectively. Owing to the lack of agreement, this RG was discussed in a consensus meeting, and the decision was made to score this as important but not critical as it did not achieve the 70% prerequisite.

4. Discussion

The anticipated “cancer epidemic” has sparked international efforts to set priorities in cancer research to enable collaboration and maximise impact [17]. The role of the patient remains central, and accurate research priorities can truly be identified only with patient involvement. We therefore performed a multistep modified Delphi process to reach a consensus regarding key RGs in RCC, establishing
a multidisciplinary collaboration between patients, clinicians, and researchers. Although a number of attempts have been made to set research priorities, this study represents the most contemporary and systematic approach to date, focusing on a European setting [18–21]. This work identified 14 crucial RGs, which were noted to be evenly distributed across RCC stages.

### 4.1. Interpretation and comparison with existing literature

A number of attempts have been made to set research priorities in RCC [18–21]. Interestingly, a previous workshop that did not directly involve patients identified RGs that were somewhat different to our own [21], focusing more heavily on understanding tumour biology, genomic and epigenetic factors, and epidemiology. Reassuringly, initiatives in which patient participation featured a central role uncovered research priorities across the same overarching themes highlighted by our work [18]. The last decade has been marked by advances in targeted therapies and immunotherapies for metastatic RCC [22]. Similarly to other initiatives, the RGs identified by our work highlight the need for more research regarding the optimal therapeutic strategy to minimise side effects and maximise efficacy, especially in patient groups that are “difficult to treat” and have rarer RCC subtypes. Indeed, patients involved in this work underlined the importance of maximising quality of life and minimising the harms of treatment, a comment that has been echoed by international research leaders and in the RGs highlighted by our work [19]. The importance of equity in the health care system has come to the forefront, as evidenced by the emphasis placed in our RGs on the patient groups that are “difficult to treat” (eg, patients with multiple comorbidities, advanced age, and poor performance status) or have rarer pathological subtypes. This has traditionally been an under-researched topic, and these patient groups have been excluded from clinical trials, are subsequently amenable to less management options, and have worse outcomes [22,23]. This has become increasingly important due to the rise in the ageing population. Equity was also highlighted by a Canadian priority-setting initiative, with emphasis placed on evaluating geographic differences in funding and access to treatment in RCC [17,18]. Although there was a crossover with the results of previous, less systematic analyses of RGs, interestingly, a crucial RG identified by our work, but not by others, relates to the management of oligometastatic disease.

In addition, two crucial RGs identified by the present analysis and other previous work relate to biomarkers in RCC for both localised and metastatic disease, to enable prognostic risk stratification and individualised patient management. Indeed, there is a growing interest in personalised and precision cancer medicine across all specialties [17]. Predictive biomarkers (ie, for systemic treatment response) will be especially important, since RCC is lagging behind other cancers in this regard; for example, breast cancer already has Food and Drug Administration–approved genomic tests, while this need has not yet been met in RCC. Early detection of and screening for RCC have also been identified as key research priorities by our work and others [17–19]. Biomarkers and new imaging approaches may play a crucial role in enabling early detection as well as improving the diagnostic pathway, in particular for small renal masses (SRMs). Our understanding of

### Table 2 – Research gaps in which there was a discrepancy amongst urologists and oncologists in the first Delphi survey.

<table>
<thead>
<tr>
<th>Research gap</th>
<th>First survey oncolgists</th>
<th>First survey urologists</th>
<th>Final outcome of entire Delphi process</th>
</tr>
</thead>
<tbody>
<tr>
<td>Investigate new imaging approaches to improve diagnosis/characterisation of incidentally detected small renal masses</td>
<td>Not important 17.65%</td>
<td>0.00%</td>
<td>Consensus: scored as critical in third survey</td>
</tr>
<tr>
<td>Important 58.81%</td>
<td>19.05%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Critical 23.53%</td>
<td>80.95%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evaluate the natural history of small renal masses to enable the development of an evidence-based active surveillance protocol</td>
<td>Not important 0.00%</td>
<td>0.00%</td>
<td>Consensus: scored as critical in third survey</td>
</tr>
<tr>
<td>Important 75.00%</td>
<td>19.04%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Critical 25.00%</td>
<td>80.95%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Develop more reliable and readily available biomarkers for immunohistochemistry that can be applied to small biopsy samples (diagnostic, predictive, and prognostic utility) to evaluate and overcome tumour molecular heterogeneity</td>
<td>Not important 11.76%</td>
<td>0.00%</td>
<td>Consensus: scored as critical in second survey</td>
</tr>
<tr>
<td>Important 52.94%</td>
<td>28.57%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Critical 35.28%</td>
<td>71.43%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Develop and validate imaging response criteria that better reflect the response to targeted therapies and immunotherapy for metastatic RCC</td>
<td>Not important 5.88%</td>
<td>0.00%</td>
<td>Consensus: scored as critical in second survey</td>
</tr>
<tr>
<td>Important 47.06%</td>
<td>28.57%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Critical 47.06%</td>
<td>71.42%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evaluate the role of immunotherapy in difficult-to-treat groups: patients resistant to first-line therapy and patients with contraindications to immunotherapy, poor performance status, advanced age, and multiple comorbidities</td>
<td>Not important 0.00%</td>
<td>4.76%</td>
<td>Consensus: scored as critical in third survey</td>
</tr>
<tr>
<td>Important 29.41%</td>
<td>57.14%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Critical 70.58%</td>
<td>38.10%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Develop evidence-based guidelines regarding follow-up/surveillance in metastatic RCC, including patient preferences and economic implications</td>
<td>Not important 0.00%</td>
<td>0.00%</td>
<td>Consensus not achieved after third survey, therefore discussed by the steering group</td>
</tr>
<tr>
<td>Important 62.50%</td>
<td>28.57%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Critical 37.50%</td>
<td>71.43%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

RCC = renal cell carcinoma.
the natural history of SRMs is limited, as is our ability to differentiate aggressive from indolent disease. This is particularly challenging in view of molecular heterogeneity and limitations associated with tumour biopsy.

4.2. Methodological considerations

The initiative followed a rigorous, systematic methodology with multiple iterations to achieve a consensus. We recruited a large number of multidisciplinary research experts and achieved similar response rates to those observed in other Delphi surveys performed in a urological setting [15,16,24,25]. The response rate increased during subsequent survey iterations. This may have been due to a combination of the timing of the first survey (during a holiday period) and more frequent e-mail reminders for subsequent iterations. Patient involvement in the initiative was a continuous process and represents a strength of the present work. In particular, the patients’ perspective was crucial in highlighting important RGs pertinent to subjects that are often overlooked by researchers, such as patient education, mental health, and the influence of social media and support groups.

We acknowledge that the majority of the experts involved in the consensus statement were working in the UK, and therefore the analysis may represent research priorities within a UK setting. However, the RGs identified were similar to those identified by a previously published work in a North American setting, suggesting that these may be common to all Western settings, including Europe [18]. Further research is required to evaluate the generalisability of these RGs and assess how geographic variation may impact priorities.

A potential limitation is the lack of involvement of allied health care professionals within the project. In addition, it was noted that the vast majority of participants were experts in urology and oncology, with an under-representation of other areas, such as basic and translational scientists. There is a potential for skewing the results towards research priorities that are of interest to these two specialities, and this should be taken into consideration when interpreting the results. Care was placed in emphasising to experts during each survey that they should score RGs independently of their area of expertise. In addition, the use of an iterative process, in which experts receive feedback from other experts, should minimise bias relating to the area of expertise. The similarities between our RGs and those identified in previous initiatives are reassuring. Furthermore, it was noted that the four RGs that were considered to be most crucial in the first Delphi survey achieved a consensus when analysing results from urologists and oncologists independently. This suggests that the identification of crucial RGs is not simply dependent on the area of expertise, although insufficient numbers were available to analyse results separately for other specialities.

Four RGs did not achieve a consensus after the third survey, and therefore these were discussed by the steering group in a meeting, as it was deemed unlikely that a consensus would be achieved by a fourth survey. However, we believe that the process of setting research priorities should be continuously re-evaluated in future. It may be that research advances in one area may shift the relative importance of RGs, so that priorities considered important at present may become critical in future.

5. Conclusions

In summary, we performed a modified Delphi process to determine key research priorities in RCC, through a collaboration between patients, clinicians, and researchers. The project identified 14 critical RGs, which place an emphasis on broad themes: maximising quality of life, personalising patient management based on biomarkers/prognostic scores, and improving the management of patient groups that are “difficult to treat” and have rarer RCC subtypes that are often overlooked. Additionally, our work suggests that further research is needed within localised RCC, to enable early detection and improved characterisation of SRMs, and in advanced disease, to explore existing and new systemic therapies. The RGs identified in this body of work will facilitate international collaboration towards a concerted attempt to improve patients’ survival and quality of life, across all stages of the disease pathway.

Author contributions: Grant D. Stewart had full access to all the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.

Study concept and design: Rossi, Blick, Handforth, Brown, Stewart.

Acquisition of data: Rossi.

Analysis and interpretation of data: Rossi, Blick, Handforth, Brown, Stewart.

Drafting of the manuscript: Rossi, Blick, Handforth, Brown, Stewart.

Critical revision of the manuscript for important intellectual content: Rossi, Blick, Handforth, Brown, Stewart.

Statistical analysis: Rossi.

Obtaining funding: Brown, Stewart.

Administrative, technical, or material support: Brown, Stewart.

Supervision: Brown, Stewart.

Other: None.

Financial disclosures: Grant D. Stewart certifies that all conflicts of interest, including specific financial interests and relationships and affiliations relevant to the subject matter or materials discussed in the manuscript (e.g., employment/affiliation, grants or funding, consultancies, honoraria, stock ownership or options, expert testimony, royalties, or patents filed, received, or pending), are the following: S.H. Rossi, C. Blick, and C. Handforth have no conflicts of interest. G.D. Stewart has received educational grants from Pfizer, AstraZeneca and Intuitive Surgical; consultancy fees from Pfizer, EUSA Pharma, and Cambridge Medical Robotics; travel expenses from Pfizer; and speaker fees from Pfizer. J.E. Brown has received fees for attendance at Advisory Boards for Merck, Amgen, Novartis, Bayer, Sandoz, Roche, BMS, and Takeda; fees for Speaker Bureau for Amgen and Novartis; travel funding to a scientific meeting from Ipsen; and institutional research funding from Amgen and Bayer.

Funding/Support and role of the sponsor: Kidney Cancer UK funded attendance at the consensus meeting for all participants. Sabrina H. Rossi is supported by The Urology Foundation, who kindly provided a research fellowship grant.

Acknowledgements: We would like to thank the charity Kidney Cancer UK and all the patients involved.
Renal Cancer Gap Analysis Collaborative: Kate Absolon (University of Leeds, Leeds, UK), Axel Bex (The Netherlands Cancer Institute, Amsterdam, The Netherlands), Christopher Blick (Royal Berkshire Hospital, Reading, UK), Janet E Brown (University of Sheffield, Sheffield, UK), Kevin Chan (Sheffield Teaching Hospitals NHS Foundation Trust, Sheffield, UK), Brice Chanez (Aix Marseille Université and Institut Paoli-Calmettes, Marseille, France), Shin Chow (The Clatterbridge Cancer Centre NHS Foundation Trust, Birkenhead, UK), Saeed Dabestani (Lund University and Skane University Hospital, Malmo, Sweden), Judit Espana-Agusti (Cambridge University Hospitals NHS Foundation Trust, Cambridge, UK), Linda S Evans (Sheffield Teaching Hospital Foundation Trust, Sheffield, UK), Kate Fife (Cambridge University Hospitals NHS Foundation Trust, Cambridge, UK), Vicky Goh (King’s College London, London, UK), Gwenaelle Gravis (Aix Marseille Université and Institut Paoli-Calmettes, Marseille, France), Peter Hall (University of Edinburgh, Edinburgh, UK), Catherine Handforth (University of Sheffield, Sheffield, UK), Lakshmi Harthar (Cambridge University Hospitals NHS Foundation Trust, Cambridge, UK), David J Harrison (University of St Andrews, St Andrews, UK), Robert Hawkins (University of Manchester, Manchester, UK), Rob J Jones (Institute of Cancer Sciences & the University of Glasgow, Glasgow, UK), Christian Kelly-Morland (King’s College London, London, UK), Vincent Khoo (The Institute of Cancer Research & Royal Marsden NHS Foundation Trust, London, UK), Tobias Klatte (Royal Bournemouth Hospital, Bournemouth, UK), Miltiadis Krokidis (Cambridge University Hospitals NHS Foundation Trust, Cambridge, UK), Teele Kuusk (The Netherlands Cancer Institute, Amsterdam, The Netherlands), James Larkin (Royal Marsden NHS Foundation Trust, London, UK), Kirsty Maclellan (Edinburgh Cancer Centre & NHS Lothian, Edinburgh, UK), Eamonn Maher (Cambridge University Hospitals NHS Foundation Trust, Cambridge, UK), Lorenzo Marconi (Coimbra University Hospital, Coimbra, Portugal), Athena Matakioudou (Cambridge University Hospitals NHS Foundation Trust and the IMEDBiotechUnit, AstraZeneca, Cambridge, UK), Tom Mitchell (Cambridge University Hospitals Foundation Trust & The Sanger Institute, Cambridge, UK), Paul Nathan (Mount Vernon Cancer Centre, Northwood, UK), Aine O’Beirne (Royal Marsden Hospital, London, UK), Davide Prezzi (Guy’s and St Thomas’ NHS Foundation Trust & King’s College London, London, UK), Christy Ralph (University of Leeds, Leeds, UK), Sabrina H Rossi (University of Cambridge, Cambridge, UK), Grant D Stewart (University of Cambridge, Cambridge, UK), Stefan Symeonides (University of Edinburgh, Edinburgh, UK), Yun Yi Tan (Beatson West of Scotland Cancer Centre, Glasgow, UK), Elisavet Theodoulou (University of Sheffield, Sheffield, UK), Fiona Thistlethwaite (Christie NHS Foundation Trust, Manchester, UK), Naveen Vasudev (University of Leeds, Leeds, UK), Galina Veliilova (University of Leeds, Leeds, UK), Balaji Venugopal (Beatson West of Scotland Cancer Centre & University of Glasgow, Glasgow, UK), Anne Y Warren (Cambridge University Hospitals NHS Foundation Trust, Cambridge, UK).

Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at https://doi.org/10.1016/j.eur.urol.2019.01.014.

References