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Seminars Article

# Trends in urologic oncology clinical practice and medical education under COVID-19 pandemic: An international survey of senior clinical and academic urologists

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## Abstract

**Objective:** Ad-hoc guidelines for managing the COVID-19 pandemic are published worldwide. We investigated international applications of such policies in the urologic-oncology community. **Methods:** A 20-item survey was e-mailed via SurveyMonkey to 100 international senior urologic-oncology surgeons. Leaders' policies regarding clinical/surgical management and medical education were surveyed probing demographics, affiliations, urologic-oncologic areas of interest, and current transportation restrictions. Data on COVID-19 burden were retrieved from the ECDC. Statistical analyses employed non-parametric tests (SPSS v.25.0, IBM). **Results:** Of 100 leaders from 17 countries, 63 responded to our survey, with 58 (92%) reporting university and/or cancer-center affiliations. Policies on new-patient visits remained mostly unchanged, while follow-up visits for low-risk diseases were mostly postponed, for example, 83.3% for small renal mass (SRM). Radical prostatectomy was delayed in 76.2% of cases, while maintaining scheduled timing for radical cystectomy (71.7%). Delays were longer in Europe than in the Americas for kidney cancer (SRM follow-up,  $P = 0.014$ ), prostate cancer (new visits,  $P = 0.003$ ), and intravesical therapy for intermediate-risk bladder cancer ( $P = 0.043$ ). In Europe, COVID-19 burden correlated with policy adaptation, for example, nephrectomy delays for T2 disease ( $r = 0.5$ ,  $P = 0.005$ ). Regarding education policies, trainees' medical education was mainly unchanged, whereas senior urologists' planned attendance at professional meetings dropped from 6 (IQR 1–11) to 2 (IQR 0–5) ( $P < 0.0001$ ). **Conclusion:** Under COVID-19, senior urologic-oncology surgeons worldwide apply risk-stratified approaches to timing of clinical and surgical schedules. Policies regarding trainee education were not significantly affected. We suggest establishment of an international consortium to create a directive for coping with such future challenges to global healthcare. © 2020 Elsevier Inc. All rights reserved.

**Keywords:** COVID-19 pandemic; Urologic oncology; Policy; Kidney cancer; Prostate cancer; Bladder cancer; Testicular cancer; Medical education

**Abbreviations:** COVID-19, Corona virus disease 2019; EAU, European Association of Urology; ECDC, European Centre for Disease Prevention and Control; SRM, Small renal mass; TURBT, Trans-urethral resection of bladder tumor; WHO, World Health Organization

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## 1. Introduction

On March 11 2020, the World Health Organization (WHO) declared the outbreak of the coronavirus disease 2019 (COVID-19) to be a pandemic [1]. The burden on the general population and healthcare providers increased dramatically, necessitating rapid adaptation and reshuffling of medical resources [2,3]. As with all other specialties, the impact of COVID-19 on urologic patients and caregivers was immense, with updated guidelines prioritizing diagnostic and therapeutic practice [4,5]. Given the 3.5-fold higher susceptibility of cancer patients to serious COVID-19-related events, special attention was paid to these patients [2,4,6,7]. From the urologic-oncologic perspective several triage and prioritizing approaches were suggested, focusing mainly on risk stratification of oncological disease [5,8]. Despite the exponential growth in data on COVID-19, implementation of these recommendations is still largely unknown, with only anecdotal information available [4,9,10]. In this report, we describe the various approaches of international senior urologic-oncology surgeons toward common urologic-oncologic diseases, focusing on practice both in surgery and in the clinic, as well as on educational aspects of our profession.

## 2. Materials and methods

A 20-item survey (Appendix 1) focusing on clinical and surgical management of urologic oncology patients, as well as on medical education during the COVID-19 pandemic, was sent to senior clinical and academic urologic-oncology surgeons worldwide. Surveys were e-mailed on April 17, 2020, and participants were asked to complete and return them before April 23, 2020. Survey data were collected via the SurveyMonkey app or by Microsoft Word documentation. COVID-19 data at country and global levels (including total numbers of new cases, positive cases and their associated deaths, as well as numbers of positive COVID-19 cases and reported deaths per capita) were retrieved from the European Centre for Disease Prevention and Control (ECDC) on the day that most of the addressees participated in the survey (April 17th–18th, 2020) [11]. Subgroup categories of the analysis were geographic regions as defined by the WHO [12], as well as COVID-19 burden (Supplementary Table 1), participant's area(s) of expertise (kidney, prostate, bladder, and testicular cancer), and movement restrictions at the time of the survey.

For statistical analysis, we used nonparametric tests: correlations were analyzed by Spearman's test, associations between continuous and dichotomous parameters by the Mann-Whitney *U* test, and associations between continuous and categorical parameters by the Kruskal-Wallis test and by the Mann-Whitney *U* test with Bonferroni correction. The Wilcoxon signed-ranked test was used for related continuous non-normal parameters. (SPSS version 25.0, IBM Corporation).

Institutional Review Board approval was waived by our institute's Helsinki Committee.

## 3. Results

Senior urologic-oncology surgeons from 17 countries located in 3 of the 6 world regions defined by WHO were approached for this study (Table 1). Of the 100 leaders who were contacted, 63% responded to our survey. Of the 63 responders, 52 (82.5%) reported working in a university-affiliated institute, 6 (9.5%) in a cancer center and 4 (6.3%) in a non-university-affiliated institute (data for 1 responder (1.6%) were not available). Responders' policies with regard to their patients' presentation at the urologic oncology clinic and their admittance to surgery are recorded in Fig. 1 and 2. Patient management (both in-clinic and surgical) was reported as a personal policy by 28 responders (46.7%), as institutional policy by 46 (76.7%) and as national policy by 15 (25%) (percentages are calculated per 60 responders; multiple answers per responder were accepted).

Subgroup analysis of policies according to WHO world regions identified significant differences between Europe and the Americas. There were longer delays in Europe than in the Americas in the processing of new visits to kidney cancer clinics ( $P=0.005$ ) or follow-up visits for small renal mass (SRM) ( $P=0.014$ ), in arranging new visits to prostate cancer clinics ( $P=0.003$ ), and in receiving intravesical therapy for intermediate-risk bladder cancer ( $P=0.043$ ) (questions 7, 8 and 9 on survey, respectively, Appendix 1). Policies for prostate biopsy of cancer naive patients also differed significantly between Europe and the Americas, but for this procedure delays were longer in the Americas than in Europe ( $P=0.017$ ) (question 12 on survey, Appendix 1). COVID-19 burden in Europe correlated significantly with leaders'

Table 1  
Number of study participants per geographic region and country of origin

| Region          | Total | %    | Country        | Total | %    |
|-----------------|-------|------|----------------|-------|------|
| Europe          | 31    | 49.2 | Belgium        | 1     | 1.6  |
|                 |       |      | France         | 6     | 9.5  |
|                 |       |      | Germany        | 5     | 7.9  |
|                 |       |      | Israel         | 2     | 3.2  |
|                 |       |      | Italy          | 3     | 4.8  |
|                 |       |      | Netherlands    | 2     | 3.2  |
|                 |       |      | Poland         | 1     | 1.6  |
|                 |       |      | Russia         | 2     | 3.2  |
|                 |       |      | Spain          | 3     | 4.8  |
|                 |       |      | Sweden         | 1     | 1.6  |
|                 |       |      | Switzerland    | 2     | 3.2  |
|                 |       |      | Turkey         | 1     | 1.6  |
|                 |       |      | United Kingdom | 2     | 3.2  |
|                 |       |      | Americas       | 29    | 46.0 |
| Canada          | 4     | 6.3  |                |       |      |
| USA             | 24    | 38.1 |                |       |      |
| Western Pacific | 3     | 4.8  | Australia      | 3     | 4.8  |

\* Geographic regions definition adopted from the World Health Organization (WHO).

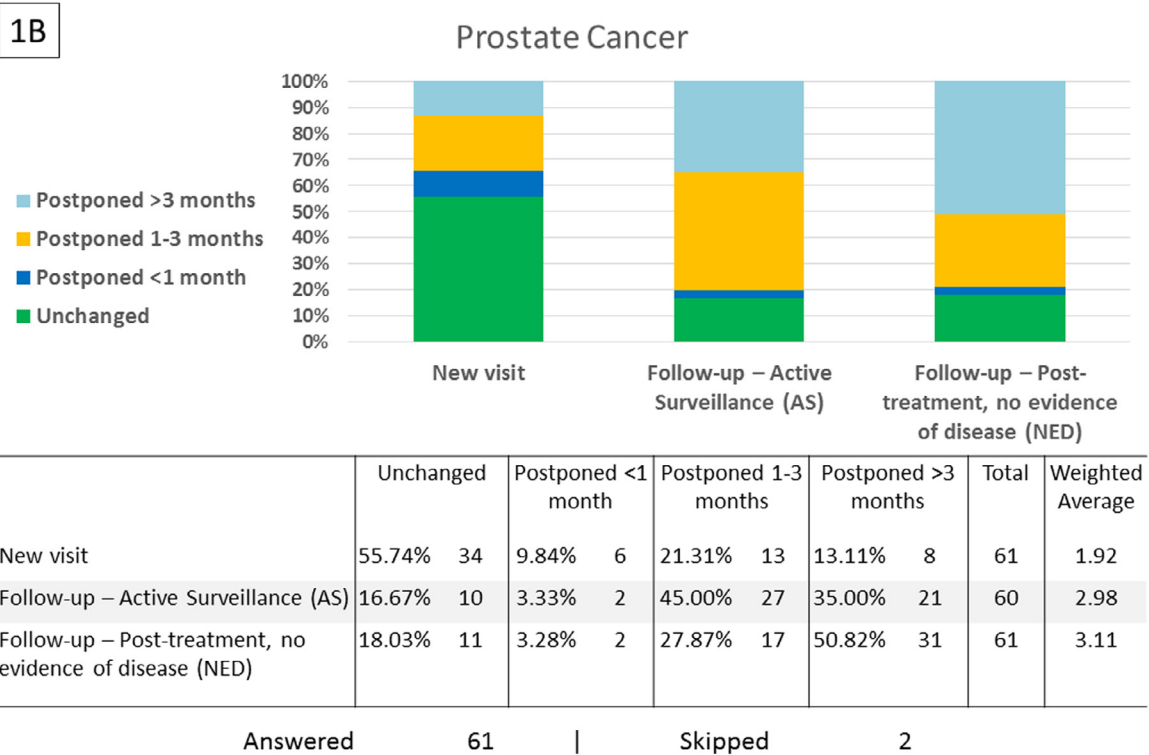
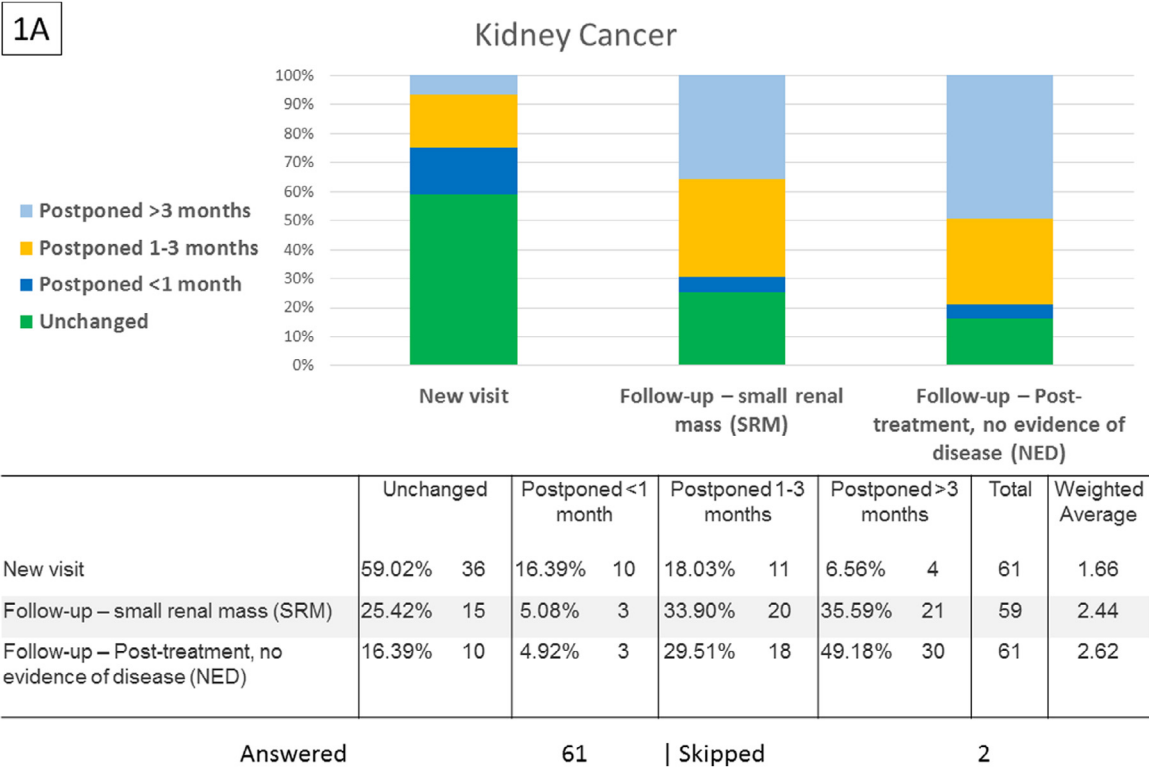


Fig. 1. Policies of senior urologic-oncology surgeons regarding the timing of clinic visits under the COVID-19 pandemic. Panel A: Kidney cancer clinic policy (Survey question #7). Panel B: Prostate cancer clinic policy (Survey question #8). Panel C: Bladder cancer clinic policy (Survey question #9). Panel D: Testicular cancer clinic policy (Survey question #10). Number of answers to each part of the question is presented under “Total”. Weighted average was calculated according to the following answer key: 1, unchanged; 2, postponed <1 month; 3, postponed 1–3 months; 4, postponed >3 months. At the bottom of the figure we present total numbers of answers (not percentages). In the graph we present percentages, calculated per available answers.

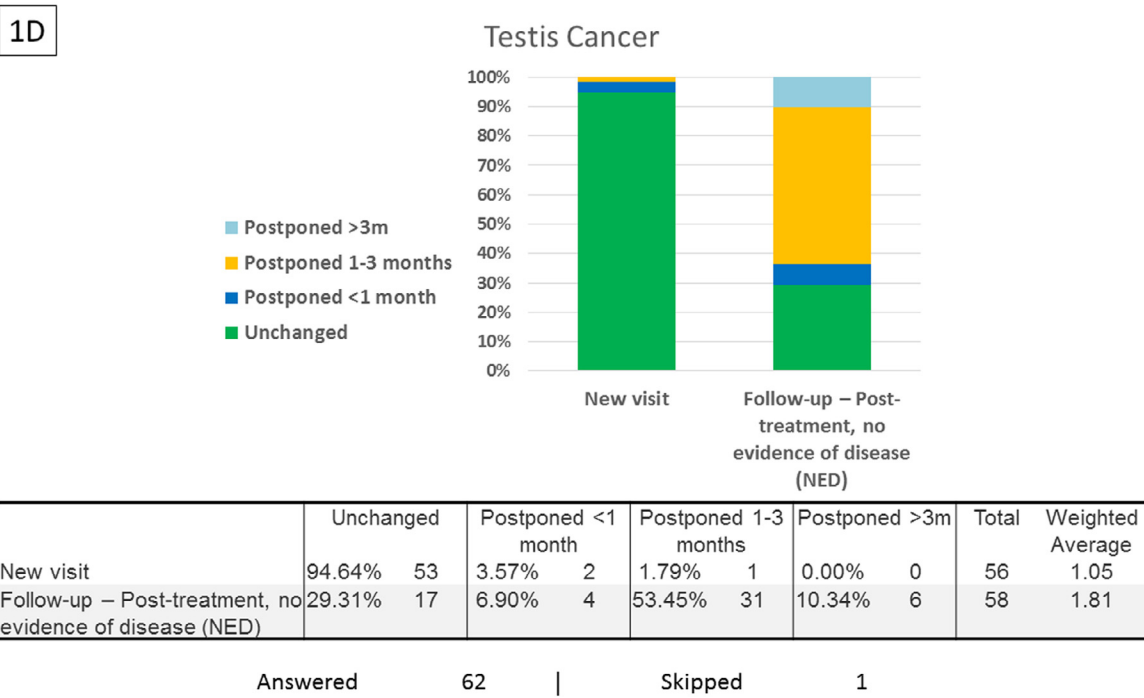
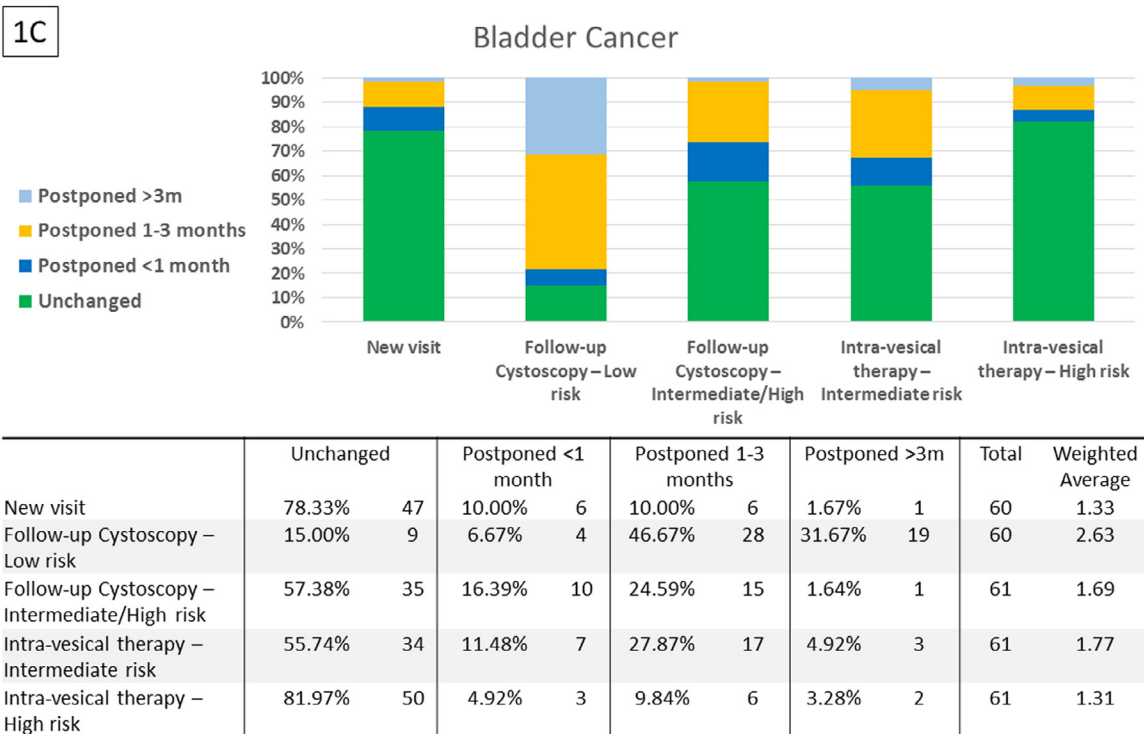


Fig. 1 Continued.

policies in some cases; for example, postponement of prostate cancer follow-up in patients with no evidence of disease correlated with total deaths per capita ( $r = 0.384, P = 0.03$ ), and policies related to intravesical therapies for both intermediate-risk and high-risk patients correlated with total deaths ( $r = 0.384, P = 0.037$  and  $r = 0.42, P = 0.019$ , respectively). Numbers of new deaths per capita correlated with delays in

nephrectomy for both T1 and T2 disease ( $r = 0.45, P = 0.011$  and  $r = 0.5, P = 0.005$ , respectively), delays in prostate biopsy for active surveillance ( $r = 0.35, P = 0.05$ ), and delays in transurethral resection of bladder tumor for Ta and T1+/Cis disease ( $r = 0.4, p = 0.024$  and  $r = 0.47, P = 0.007$ , respectively) (Supplementary Table 2). Similar analysis for the Americas was noncontributory.

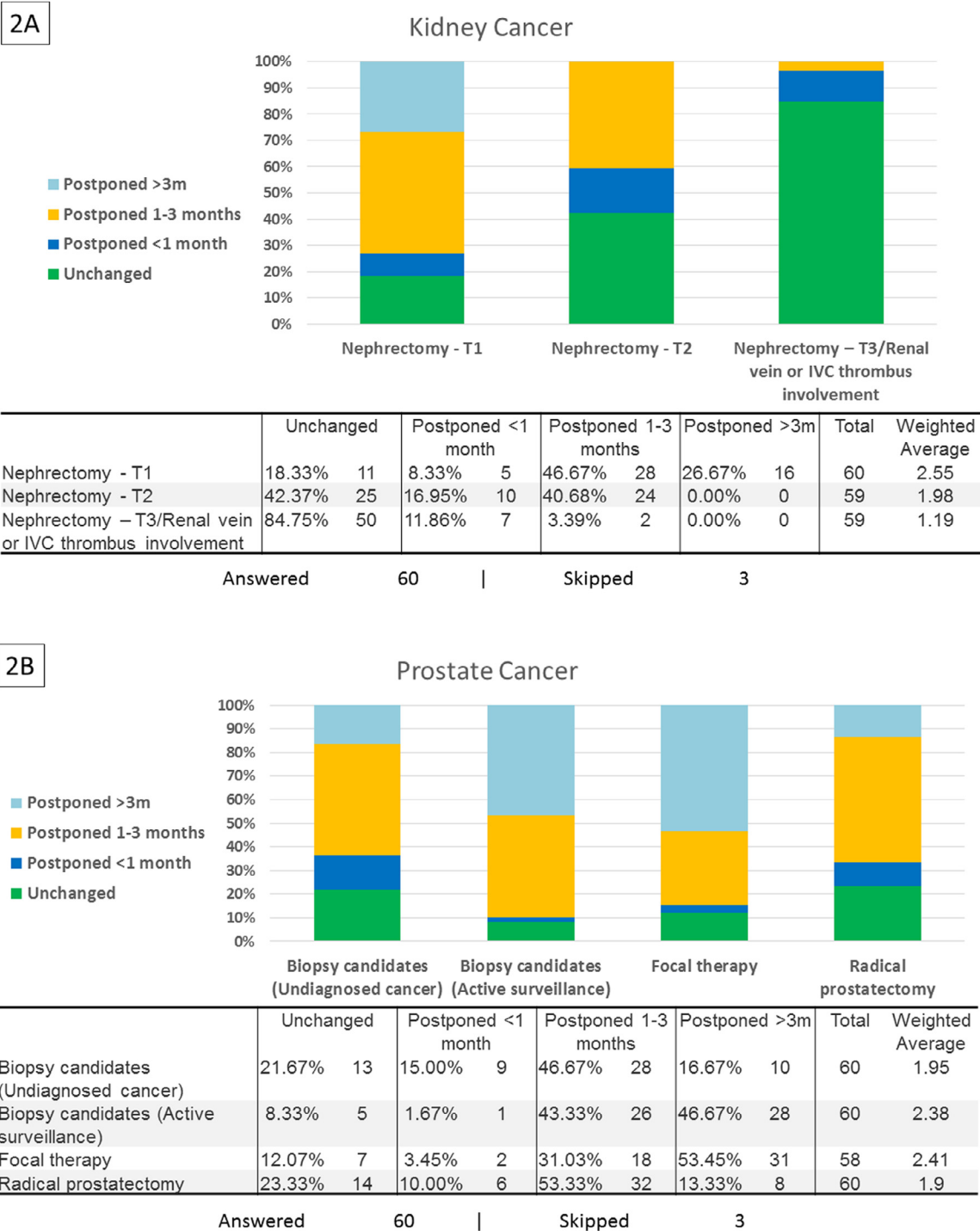
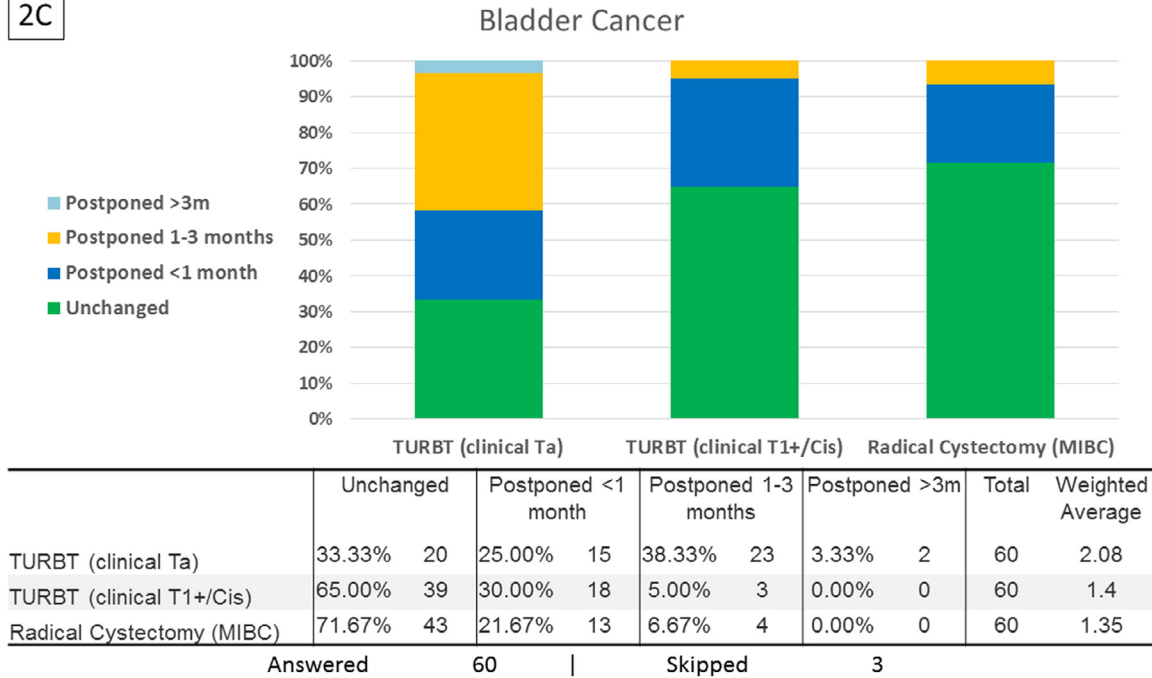


Fig. 2. Policies of senior urologic-oncology surgeons regarding the timing of surgeries under the COVID-19 pandemic. Panel A: Kidney cancer surgery policy (Survey question #11). Panel B: Prostate cancer surgery policy (Survey question #12). Panel C: Bladder cancer surgery policy (Survey question #13). Panel D: Testicular cancer surgery policy (Survey question #14). Number of answers to each part of the question is presented under “Total”. Weighted average was calculated according to the following answer key: 1, unchanged; 2, postponed < 1 month; 3, postponed 1–3 months; 4, postponed >3 months. At the bottom of the figure we present total numbers of answers (not percentages). In the graph we present percentages, calculated per available answers.

Transportation restrictions were described as limited by 33 (52.4%) responders, banned (full quarantine) by 16 (25.4%), and unlimited by 13 (20.6%) at the time of survey (data for 1 responder (1.6%) were not available).

Leaders’ policies regarding active surveillance for prostate cancer were significantly affected by these limitations, delaying both follow-up and biopsy schedules ( $P < 0.05$ ).

2C



2D

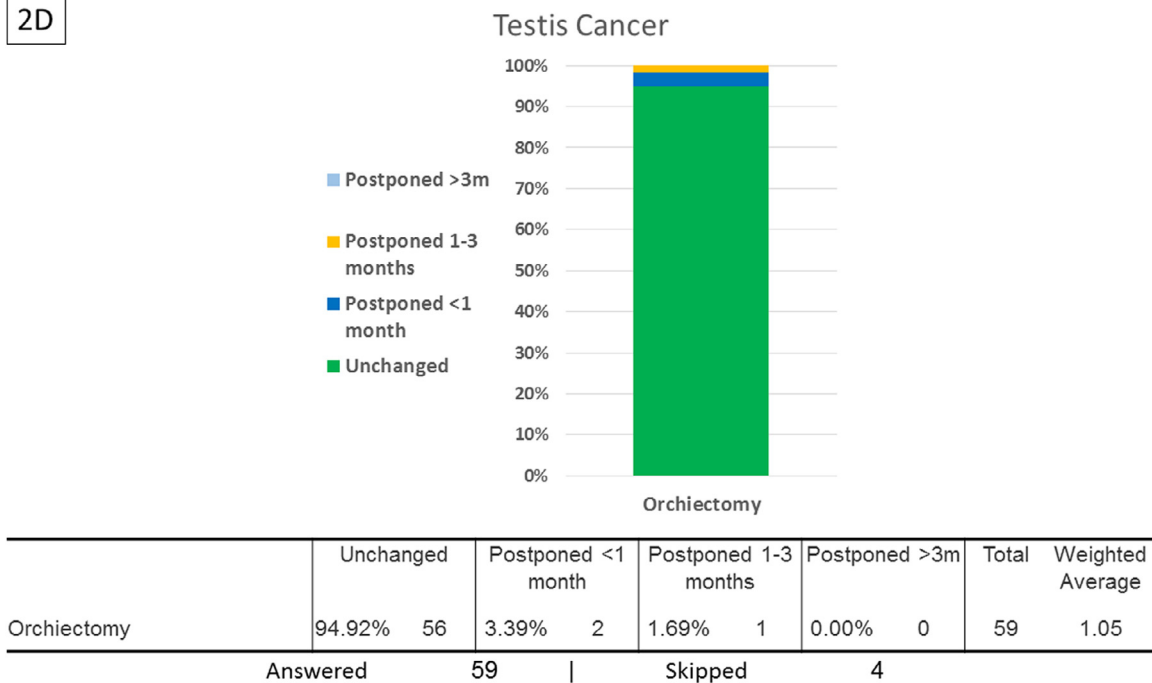


Fig. 2 Continued.

Prostate cancer was reported as a main urologic-oncologic area of interest by 51 (81%) of responders, bladder cancer by 44 (69.8%), kidney cancer by 31 (49.2%) and testicular cancer by 17 (27%). These percentages were calculated per 62 responders; multiple areas of interest per responder were accepted. Subgroup analysis based on area of interest identified longer postponements of nephrectomy for T2 disease

among leaders, who practiced mainly urologic-oncology of other organs rather than among those self-identified as focusing on kidney cancer treatment ( $P = 0.007$ ).

Overall policy of surgeries' postponement by the treating urologist averaged  $57.6\% \pm 25$ , compared to deferral of surgery owing to patients' choice in  $42.8\% \pm 25.1$  (as estimated by the treating urologist) ( $P < 0.0001$ ).

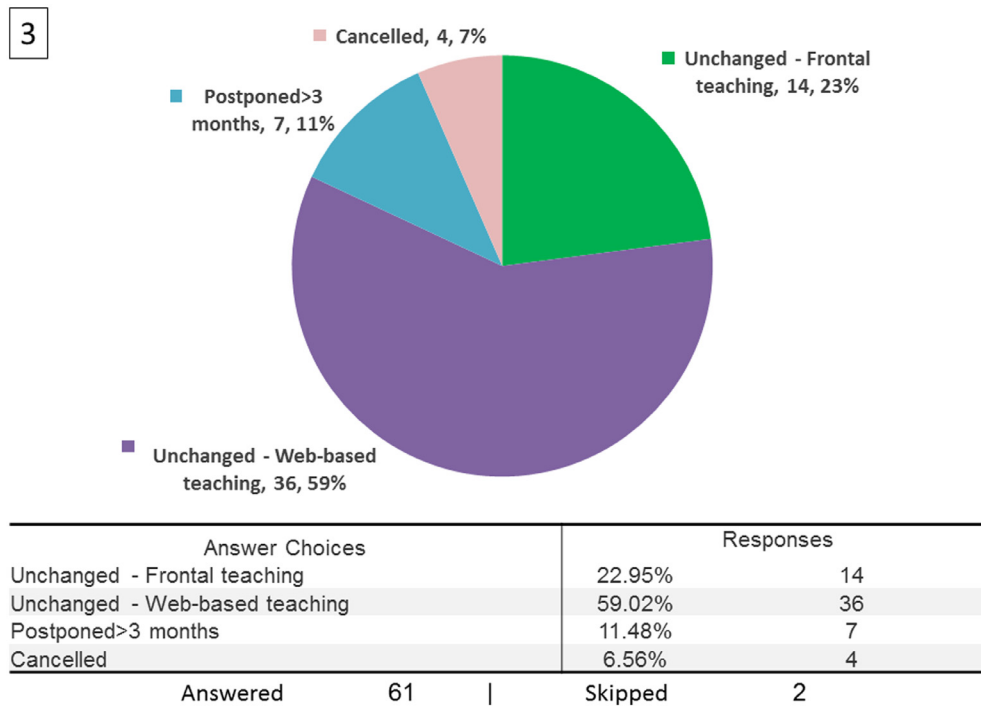


Fig. 3. Policies of senior urologic-oncology surgeons regarding residents' and fellows' training sessions (Survey question #18). (Number is calculated as a percentage of 61 available answers.)

Medical education policies regarding training sessions for urologic-oncology residents and fellows were mostly unchanged (Fig. 3). The average number of national and international meetings for which attendance had been planned in December 2020 dropped (under COVID-19) from a median of 6 (IQR 1–11) to the current median of 2 (IQR 0–5) ( $P < 0.0001$ ).

#### 4. Discussion

Professional forums publish recommendations and guidelines aimed at minimizing the impact and risks of the COVID-19 pandemic for both patients and health professionals, as well as to facilitate decision making. In the field of urologic oncology, for example, the European Association of Urology (EAU) Guidelines Office Rapid Reaction Group prioritizes diagnosis and treatments by adopting a risk-stratified approach to urologic diseases [5]. Our data show that the policies of a majority of senior urologic-oncology surgeons is to maintain a schedule of new clinic visits for the 4 malignancies surveyed (Fig. 1), a necessary step for proper risk stratification. Such a risk-stratified approach is indeed manifested throughout our survey in all aspects of urologic-oncologic diseases. Thus, for example, clinic visits for kidney cancer patients diagnosed with SRM, as well as for prostate cancer patients on active surveillance, are mostly postponed (Fig. 1), in line with our practice of accommodating a conservative approach to these malignancies [13–15]. Likewise, for low-grade bladder cancer, the majority

policy option is follow-up rather than transurethral resection of bladder tumor (Fig. 1). Evidence supporting such an approach, as well as recent evidence from Wuhan reporting a 20% mortality rate in asymptomatic patients who tested COVID-positive after surgery, may support a policy of leaning toward a more conservative clinical option [16–18]. In contrast, in the case of advanced diseases such as muscle-invasive bladder cancer, or kidney cancer T3 tumors, or tumors with renal vein or inferior vena cava invasion, the majority policy with regard to surgical timing was unchanged. Even under a competing risks strategy, and allowing for the higher COVID-19 risk after surgery in both cancer patients and older patients, there is clear evidence of poorer outcomes for these patients as a result of treatment delays [19–21]. The nearly unanimous policy of not delaying radical orchidectomy is probably attributable to the rapid doubling time for testicular cancer as well as to the fact that these patients, being mostly young, belong to a lower COVID-19 risk group [22,23].

We identified significant policy differences between Europe and the Americas. Although most responders reported applying a personal or institutional policy rather than a national one, this finding points to the effect of different world regions in influencing urological-oncology clinical practice. In addition to the COVID-19 pandemic, preexisting differences in the burden of urologic-oncologic diseases, as well as prior differences between world regions' guidelines, may also contribute to these differences [24,25]. The effect of COVID-19 on policy, however, gains



further support from the correlation of European senior urologic-oncology surgeons' policy with the burden of the pandemic (see Supplementary Tables 1 and 2).

Travel burden was previously shown to correlate with advanced disease at diagnosis and worse prognosis in cancer patients [26]. The results of our survey, associating transportation restrictions only with an active surveillance policy for prostate cancer rather than all other urologic-oncology diseases, further supports the application of a risk-stratified approach, possibly also by the governmental exemptions of cancer patients from such restrictions.

Responders with a primary interest in renal cancer tend not to delay nephrectomies for T2 disease, unlike senior urologic-oncology surgeons who report areas of interest that focus on other urologic malignancies. Although this may point to some subspecialty effect even at the highest levels of expertise, the claim that waiting time for surgery does not have an adverse effect on treatment of larger renal tumors, as well as the high level of expertise of our survey responders, reflects the ongoing debate regarding this disease [27–29]. Interestingly, our results show a significant difference between urologists and their patients in the perception of surgery postponement. This may be explained by a gap between the way data on COVID-19 are interpreted by medical personnel and by others.

Finally, in line with the published literature, our survey shows that the approach to the medical education of trainees is mostly unchanged during the pandemic, apparently in recognition of the need to emphasize tomorrow's generation of health caregivers even under the prevailing extreme conditions [30]. A high level of education, however, such as that acquired at professional meetings, seems to be severely disrupted.

We recognize that our study has several limitations. Firstly, with over 90% of our survey responders affiliated with universities and cancer centers, some of our findings may not be applicable for urologists working in private practices, where reimbursement is directly related to seeing patients. Second, our survey lacks discriminating nuances, such as the exploitation of telemedicine for clinic visits. To keep our survey short and our responders easy to recruit, as well as to generalize our findings and make them easily applicable by urologists worldwide, we tried to avoid the discrimination of centers based on their availability of clinical tools. Since we were unaware of which centers have available web-based follow-up tools and are permitted to utilize them for clinical purposes, we decided to avoid raising that issue among the clinical questions in our questionnaire. We believe that short, simple, and generalized surveys indeed help to increase the response rate in such a limited timeline, allowing translation to more powerful statistics and better ability to draw conclusions. In the context of COVID-19, speed is of the essence in our attempts to outrun the pandemic.

## 5. Conclusion

In conclusion, the immense effect of the COVID-19 pandemic worldwide has led senior clinical and academic urologic-oncology surgeons to apply a risk-stratified approach with regard to the timing of both surgical treatments and visits to the clinic. While the planned attendance at professional meetings showed a significant decrease, it appears that the pandemic, for the most part, has not affected mentors' approach towards medical education of trainees. We believe that our findings emphasize the need to establish an international committee, which will collect data on the impact of this pandemic on delays in treatment of genitourinary malignancies in variety of healthcare institutes, and create a directive for coping with such future challenges to global healthcare.

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### Supplementary materials

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