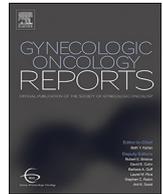




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Survey article

The perceptions of gynecologic oncology fellows on readiness for subspecialty training following OB/GYNRESIDENCY

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ABSTRACT

A recent survey of fellowship program directors (PD) within gynecologic oncology (GO) noted concerns regarding the abilities of incoming fellows. The objective of this study was to evaluate the perceptions of current and former fellows in gynecologic oncology of their readiness for fellowship training. A previously used survey was modified and distributed in 2016 to current and former fellows in GO. The survey explored domains of independent practice, psychomotor ability, clinical evaluation and scholarship. A standard Likert scale was employed and domains/responses were tailored to the subspecialty. A total of 150 current and recently former fellows responded to the survey, for a response rate of 38.7%. Nearly 70% of respondents reported being able to independently perform a hysterectomy when starting fellowship, and nearly 50% felt they could perform lysis of adhesions either without assistance. Although nearly 95% reported having had the opportunity to develop a plan of action for patients on labor and delivery, only 40.7% felt able to independently manage postoperative complications without assistance. Common themes that emerged in the open-ended responses pertained to self-perception of inadequate surgical skills and knowledge specific to gynecologic oncology. Although the majority of current and former fellows in gynecologic oncology report feeling prepared for fellowship, themes noted in the open-ended responses suggest a lack of confidence in surgical skills and clinical knowledge.

1. Introduction

Over the last two decades, an increasing number of residents in obstetrics and gynecology (OG) are pursuing subspecialty training. (Rayburn et al., 2012) A recent survey of fellowship program directors (PD) within the subspecialty disciplines of OG noted concerns regarding the abilities of incoming fellows. (Guntupalli et al., 2015) This was especially significant within gynecologic oncology (GO). The surgical skills of incoming fellows were globally noted to be deficient, and concerns were expressed regarding the inability to independently perform simple gynecology procedures, and deficiency of academic skills pertaining to research. (Doo et al., 2015)

These are numerous potential causes for these concerns, including insufficient preparation of OG residents for subspecialty training, or expectations of subspecialty PD that do not appropriately reflect OG residency training. However, a comprehensive solution for potential deficiencies perceived by teachers should also be composed with input from learners on their perceived weaknesses. In our recent publication

of survey results from fellows in four of the OG subspecialties, respondents noted fewer opportunities for independent practice in post-operative care compared with obstetrics, and decreased comfort with fundamental operative tasks compared with procedures. (Urban et al., 2018a; Urban et al., 2019b) The objective of this study was to review the self-perceived readiness of current and recently former fellows in GO upon starting fellowship.

2. Methods

Approval for this study was obtained from the institutional review boards of the first (R.U.) and senior (S.G.) authors. Approval was received from the Society for Gynecologic Oncology to obtain a list of members identified through a manual search of the directory for people listed as “Fellow-in-Training” or “Candidate” as of October 13, 2015. An email stating the purpose of the study, an invitation to participate and a link to a web-based questionnaire was sent to all current and recently graduated fellows. Participants were contacted by e-mail three

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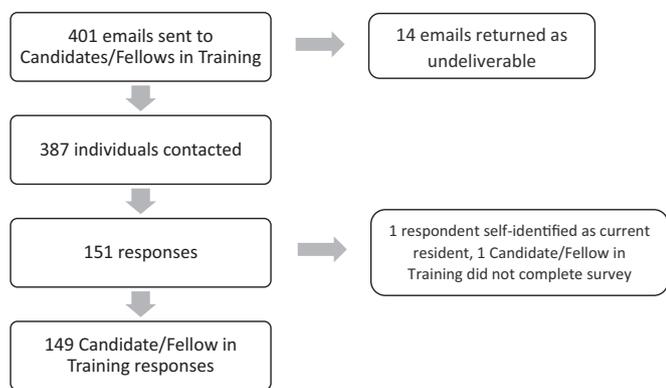


Fig. 1. Description of cohort.

Table 1A
Description of cohort.

Status	
Current fellow (research)	31 (20.7%)
Current fellow (clinical)	50 (33.3%)
Completed fellowship	68 (45.3%)
Years since completing residency	
0–1	16 (10.7%)
1–3	55 (36.7%)
3–5	43 (28.7%)
> 5	35 (23.3%)
Residency associated with a fellowship?	
Yes	85 (56.7%)
No	65 (43.3%)
Independent practice in between residency & fellowship?	
Yes, > 1 year	10 (6.7%)
Yes, 0–1 years	11 (7.4%)
No	128 (85.9%)
How prepared did you feel for fellowship after residency?	
Very Prepared	51 (34.2%)
Prepared	69 (46.3%)
Neutral	19 (12.8%)
Unprepared	9 (6.0%)
Very unprepared	1 (0.7%)

times over the course of 8 weeks. No incentives were provided to participate in the survey. The backbone of the survey was based on work by Guntupalli et al., addressing domains in autonomy, independent practice, technical ability, academic scholarship, and clinical evaluation. (Guntupalli et al., 2015) The survey was individualized to reflect the expectations and abilities of fellows in GO. A copy of the survey for each subspecialty is provided in Appendix 1.

Data were directly entered electronically into the Research Electronic Data Platform at the University of Colorado through a secure network server. Quantitative data were grouped into two categories based on the Likert scale with the “strongly agree” and “agree” responses grouped together as “agree” and the “neutral,” “disagree,” and “strongly disagree” grouped together as “disagree.” For each query, the “agree group” was compared with the “disagree” group to assess for statistical differences between sub-specialties. Written responses to open-ended questions were analyzed in order to identify themes.

Table 1B
Responses to questions pertaining to independent practice.

During residency, were you given an opportunity to independently develop a plan for...?	Often	Sometimes	Neutral	Rarely	Never
Postoperative patients	123 (81.9%)	24 (16.1%)	2 (1.3%)	1 (0.7%)	0
Outpatient visits	99 (66.4%)	34 (22.8%)	5 (3.4%)	11 (7.4%)	0
Plan for patient on labor & delivery	141 (94.6%)	6 (4.0%)	1 (0.7%)	1 (0.7%)	0
Plan for intraoperative complications	38 (25.5%)	67 (45.0%)	7 (4.7%)	34 (22.8%)	3 (2.0%)

3. Results

A total of 401 Candidates and Fellows in Training were contacted to participate in this survey - 14 electronic messages were returned as undeliverable, one respondent was a current resident, and one survey was incomplete. With a total of 149 respondents, this resulted in a response rate of 37.1% (Fig. 1).

Of all respondents, more than half (54.4%) reported currently being in fellowship, and 68 had completed fellowship (Table 1A). The majority of respondents (85.9%) did not have experience in independent practice between the completion of residency and the beginning of fellowship; this was similar for Fellows in Training and for Candidates (88.2%). For those respondents who were Candidates, 66 had graduated from fellowship < 5 years prior to the survey. More than half (56.4%) of respondents noted that their residency was associated with a GO fellowship. Response rates were similar for Candidates and Fellows in Training.

3.1. Preparation for fellowship (i.e. residency experience)

More than three-quarters of respondents (80.5%) reported feeling “prepared” or “very prepared” for fellowship after residency. This was similar for Fellows in Training and for Candidates. Open-ended responses to the question of “how prepared did you feel for fellowship after your residency?” are noted in Table 2A. Of those respondents who replied “neutral,” “unprepared,” or “very unprepared,” 17.2% noted a lack of confidence in their surgical skills in the open-ended comments. Of those who replied “prepared” or “very prepared,” 3.3% noted a lack of confidence in surgical skills (Table 2B).

3.2. Research

During residency, all respondents reported participating in a research project. The majority (84.6%) wrote a manuscript during residency. Approximately half of respondents (50.3%) received education on scientific writing. Nearly all respondents (95.3%) reported receiving education on evidence-based medicine and 86.6% applied evidence-based medicine guidelines to literature in GO during residency.

3.3. Opportunities for independent practice

When asked about opportunities for independent practice in residency, the majority of respondents (81.9%) noted that they “often” reported opportunities in residency to independently develop a plan of action for postoperative patients, and 16.1% sometimes had such opportunities (Table 1B). Nearly 90% reported having had opportunities to either often or sometimes independently develop a plan for outpatient visits. Approximately 70% reported having opportunities to either often, or sometimes, to independently develop a plan for intraoperative complications. Nearly 95% noted that they often had opportunities to independently develop a plan of action for L&D patients.

When entering fellowship, 40.9% of respondents felt able to independently management postoperative complications without assistance and 6% felt unable to independently manage postoperative complications with assistance.

The majority of respondents (73.2%) felt able to independently

Table 1C
Responses to questions pertaining to operative experience.

Do you feel that when you entered fellowship, you were able to independently...?	Yes, without assistance	Yes, with assistance	No
Perform a hysterectomy	104 (69.8%)	41 (27.5%)	4 (2.7%)
Perform straightforward laparoscopy procedure	119 (79.9%)	25 (16.8%)	5 (3.4%)
Be proficient in recognizing tissue planes	79 (53.0%)	59 (39.6%)	11 (7.3%)
Perform lysis of adhesions	68 (45.6%)	75 (50.3%)	6 (4.0%)
Pack the bowel in the abdomen	94 (63.1%)	40 (26.8%)	15 (10.1%)
Proficiently use energy and energy sources	122 (81.9%)	26 (17.4%)	1 (0.7%)

Table 2A
Open-ended responses to the question “how prepared did you feel for fellowship after your residency?” (35 comments).

Lack of confidence in surgical skills (28.2%).
“Didn’t have enough cases in residency to be comfortable operatively.”
“Did not feel well-prepared from a surgical standpoint.”
“I felt prepared clinically but was nervous about my operative experience/skills”
“Although I specifically chose my residency program for its robust Gyn Onc experience, I still wish I had more (primarily surgical) opportunities in residency. This may be biased b/c I was aiming to get as much experience to be a better (future) fellow.”
“Not well prepared due to low surgical volume residency”
“I did not feel prepared surgically or with a good fund of knowledge”
Lack of appropriate fund of knowledge (22.9%)
“I felt prepared for the demands of a fellowship; however, at my program we did not have any exposure to initiating chemotherapy and its management and complications (all patients were managed by med onc or at outside facilities due to it being a referral center). In addition minimal literature at journal club was presented or explored.”
“Coming from a residency where Gyn Oncs did not do chemotherapy, feel less prepared for management issues related to chemo/RT, as well as late stage/ advanced complications like fistulas, neutropenic sepsis, end of life, etc.”
“Did not feel prepared in terms of textbook knowledge, clinical trials, medical management of post op comorbidities”
“Did not have independent ICU experience in residency and had primary management of ICU patients in fellowship”
“We didn’t do any onc clinic as residents and I felt my knowledge base for outpatient onc plans is lacking.”
“The major difference is the critical care thinking associated with gyn Onc patients that we normally take for granted in young healthy obstetrics and regular gyn patients.”
“Well prepared generally for fellowship but not fir oncology knowledge specifically”
“I did not feel prepared surgically or with a good fund of knowledge”
Unprepared for rigor/stress of fellowship (11.4%)
“I personally felt prepared but did not anticipate the rigors of the fellowship of the level of surgical expertise required of a gyn oncologist”
“I don’t think residency prepared me for the rigors of fellowship ...”
“Quite unprepared for the much longer hours and near constant call required in fellowship”
“The patient load was much larger in fellowship, faster paced, more stressful.”
Unprepared for research/scholarship (5.7%)
“I felt prepared clinically but not on the research side”
“Felt well prepared surgically, slightly less prepared from a research standpoint.”

evaluate a new outpatient without assistance, and 24.8% felt able to evaluate a new outpatient with assistance. Only 2% noted they did not feel comfortable evaluating an outpatient independently.

Table 2B
Open-ended comments stratified by self-perceived preparedness for fellowship.

Themes noted in optional comments in response to „How prepared did you feel for fellowship after your residency?“	“How prepared did you feel for fellowship after your residency?“	
	Very prepared (n = 51) or prepared (n = 69) (n = 120, 80.0%)	Neutral (n = 19), unprepared (n = 9) or very unprepared (n = 1) (n = 29, 19.3%)
Lack of confidence in surgical skills	4 (3.3%)	5 (17.2%)
Lack of appropriate fund of knowledge	6 (5.0%)	2 (6.9%)
Unprepared for rigor/stress of fellowship	4 (3.3%)	0
Unprepared for research/scholarship	1 (0.8%)	2 (1.9%)

3.4. Operative experience

When asked about operative experience in residency, nearly 70% of respondents felt able to perform a hysterectomy without assistance when entering fellowship, and 79.9% felt able to independently perform straightforward laparoscopic procedures without assistance (Table 1C). > 50% felt they were proficient in recognizing tissue planes without assistance; 39.6% felt they could do so with assistance, and 7.4% did not feel proficient in recognizing tissue planes. Half of respondents felt that when entering fellowship, they could perform lysis of adhesions with assistance; 45.6% felt they could do so without assistance. > 60% felt they could independently pack the bowel in the abdomen without assistance when entering fellowship, and > 80% felt proficient in using energy and energy sources without assistance.

3.5. Residency experience

Open-ended responses to the question of “describe the strengths and deficits of residency training for fellowship” are noted in Table 3A. Common themes included deficits in clinical management and knowledge specific to GO, not enough surgical volume, and the impact of fellows. Of the 20 respondents who replied that they felt “neutral,” “unprepared,” or “very unprepared” for fellowship after residency, 15% commented on the lack of research, 15% commented on deficiencies in GO knowledge and clinical management, and 15% commented on lack of surgical experience (Table 3B).

4. Discussion

Residencies in OG seek to train physicians who are competent in the medical knowledge and procedural skills necessary to care for a woman throughout her lifespan. The challenges in doing so include duty hour restrictions and rapid advances in medical knowledge. In addition, programs must now contend with decreases in the total number of hysterectomies performed by residents, once considered the “bread and butter” of gynecology.(Doll et al., 2016) This is perceived in our study through feedback from current and former fellows.

The results of this study, in combination with the results of a prior study,(Urban et al., 2018a; Urban et al., 2019b) reveal discrepancies between the perceptions of current and former fellows, and those of GO fellowship program directors, in regards to surgical skills and medical knowledge. For example, in the prior study of program directors (Guntupalli et al., 2015), only 43.5% of faculty and PD felt that

Table 3A
Open-ended responses to the question “describe the strengths/deficits of residency training for fellowship” (48 comments).

Impact of obstetrics training (8.3%)
“Too much obstetrics”
“High volume of ob made it difficult to focus more on subspecialties”
“I felt like I was in a very obstetrics-heavy program, which I would have preferred to have more time in gyn-related rotations.”
“Difficult high risk OB service helped train me to be calm in bad situations.”
Not enough exposure to research (8.3%)
“Exposure to basic and translational research techniques is limited during residency as it is very difficult to structure adequate time to complete wet lab experiments. Most of these skills were acquired in fellowship.”
“However, the down side of residency without associated fellowships is that my basic science research background was lacking.”
“...I felt less well prepared from academic standpoint regarding research and scientific writing.”
Not enough mentoring (6.2%)
“Deficits: no fellowships at our program and minimal guidance in pursuing a fellowship, met the minimum requirements for research exposure, which is not enough for a desire to pursue fellowship”
“I had no fellows in my residency program, which was detrimental when applying to fellowship because my program was not in tune with the application process/ didn't realize how important they were in the match process by making phone calls etc. I felt there was little guidance and little mentorship in what academic gyn oncology could be.”
“Deficits: I came into residency already wanting to do gynecologic oncology, but I still feel my mentorship during residency could have been more fostering.”
Deficient in GO knowledge/clinical management (12.5%)
“Content of gyn onc on my rotations were lacking but surgical skills/experience were above average”
“I was unprepared in my understanding of gynecologic oncology literature and management.”
“We didn't have a gyn/oncologist until I was a 3rd year, very slow service. So... no tumor board/evidence based discussion of guidelines, etc.”
“We did not do any chemotherapy or chemotherapy-related side effect management during residency since our Gyn Oncologists did not administer chemotherapy.”
Not enough surgery (22.9%)
“Due in part to low operative volume and sharing cases with fellows, I had limited opportunities for autonomous decision making in the OR, and with taking a junior trainee through the case.”
“Not enough surgical cases, attendings constantly took away cases from the resident and did them themselves or called for help.”
“My attendings on gyn and gyn onc in residency seemed unsure of themselves and this often trickled down to the residents. Because they were unsure of themselves they often called in for help which meant less operative time for me.”
“Robotic and laparoscopic surgical training could have been stronger prior to fellowship.”
“Deficits: I did not get enough robotics training in residency to be ready for robotic oncology cases.”
“Minimal robot experience and laparoscopic experience”
“low surgical volume, minimal robotic training. Almost no minimally invasive vaginal cuff closure or laparoscopic suturing.”
“Limited surgical training - > feeling like I had to ‘start over’ in fellowship (at a different institution)”
“There are currently very few opportunities for residents to actively make intraoperative decisions especially regarding complications. Residents are most often being led through the steps of the operation by fellows or faculty. Increased simulation would provide the opportunity to increase these opportunities without compromising patient safety, but the realities of the burden of the electronic medical record and time required to provide patient care, limit the time residents can spend doing activities like simulation.”
“I wish we had more one-on-one time in the OR with our onc attendings during residency”
Not enough exposure to feel prepared to care for large service (6.2%)
“The expectation for fellowship is very clinically competent with little instruction given. Fellows who did not have much clinical experience really struggle to manage fellow responsibilities.”
“We didn't have a gyn/oncologist until I was a 3rd year, very slow service... just didn't have the exposure to be ready for a very busy clinical service with multiple complicated/sick patients.”
“The patient load was much smaller in residency- so very quickly had to develop the skills/organization to care for 25–30 patients compared to the 8–12 patient services I was used to in residency”
Impact of fellows (16.7%)
“My residency did not have any fellowships associated with it which was great for developing surgical skills. I was able to actively develop surgical skills instead of observe/retracting for a fellow.”

Table 3A (continued)

“We did, however have high surgical volume and no fellows, so lots of experience as first assist on big cases.”
“Helpful that I trained at a residency where there was a very strong fellowship program, but residents were still given a lot of autonomy both on and off one rotations regarding patient care management”
“When I started my residency, we did not have a fellowship, and I think this is why I was so prepared for fellowship. The fellowship started in my chief year, and it was immediately apparent that a surgical fellowship takes cases from residents. it's a self perpetuating cycle - residents who train at programs with fellowships are more likely to match, but they are less likely to be able to do a hyst, so as a fellow they end up doing resident level cases in order to ‘catch up’”
“The strengths of a residency without fellows was that I was performing high level complexity cases as a resident that would normally be reserved for a fellow. I was managing the intra-, post-operative complications as a resident, which very much prepared me for handling these situations as a fellow.”
“I had no fellows in my residency program, which was detrimental when applying to fellowship because my program was not in tune with the application process/ didn't realize how important they were in the match process by making phone calls etc. I felt there was little guidance and little mentorship in what academic gyn oncology could be. The residents in my fellowship program had a completely different experience and were mentored and supported from a very early stage. Surgically there are some downsides in being at a program with a fellowship - as the fellow I was assisting the attending in the nodes/debulking and leaving the hysterectomies to the residents. This was helpful to me (the fellow) later on in learning how to teach as an attending, but as a resident, comparatively, I did gain a lot more experience surgically than my residents.”
“Residency training: fellows took priority over residents in surgical education. Did not have many opportunities to operate more independently with just fellow or attending.”

incoming fellows were proficient in the dissection of tissue planes; in contrast, we found in this paper that > 90% of current and former fellows felt able to recognize tissue planes with or without assistance. These differences may, in part, be due to discrepant expectations between graduated residents starting GO fellowship, and GO PD and faculty. This could be addressed by allowing the PD for GO fellowships to have access to the procedural numbers and clinical Milestones of a newly matched fellow to assess prior experience. The inclusion of surgical aptitude tests (Louridas et al., 2016) in OG residency may also serve to not only address specific technical competencies within OBG but also to identify the fitness of residents for surgical subspecialties. We should also consider extrapolating from our colleagues in General Surgery regarding curricula on basic technical skills (Stefanidis et al., 2015). Future training in OG should focus on properly balancing the didactic and clinical education based on individual resident needs, as suggested by Dr. Mandel's response to Guntupalli et al. (Mandel, 2016).

Nearly a quarter of current and former fellows commented on a lack of appropriate medical knowledge. This is similar to the findings of the survey of PD in which only half of respondents felt that incoming fellows were proficient in pathophysiology of diseases. One potential means of addressing these deficiencies is with fellowship “bootcamps,” programs designed to identify deficits in training and to teach skills that are basic to a particular field to level the playing field for trainees with variable experience (Fernandez et al., 2012). To date, few studies have explored the use of such programs in fellowships (Bismuth et al., 2012).

There were also discrepancies noted in patient ownership. In the survey by Guntupalli et al.², nearly 50% of the comments made by faculty and PD pertained to a general lack of ownership by incoming fellows. One cannot ignore the impact of the changing clinical landscape in which teaching physicians are required to supervise trainees more directly (Pellegri, 2017). Incoming fellows may feel very prepared to care for an OG patient population; in contrast, patients with gynecologic cancers are often older and have more comorbidities. This may lead to a discrepancy between the capability of and expectations for GO fellows.

An interesting finding pertained to research experience. In the survey by Guntupalli et al.², < 50% of faculty and PD reported that new fellows were competent in data analysis, research design, basic

Table 3B
Open-ended comments stratified by self-perceived preparedness for fellowship.

Theme noted in open-ended comments to question of „Describe the strengths/deficits of residency training for fellowship“	Response to „How prepared did you feel for fellowship after your residency“	
	„Very prepared“ (51) or „prepared“ (69) (n = 120, 80.0%)	„Neutral“ (19), „unprepared“ (9) or „very unprepared“ (1) (n = 29, 19.3%)
Impact of obstetrics training	3 (2.5%)	1 (3.4%)
Not enough exposure to research	1 (0.8%)	3 (10.3)
Not enough mentoring	2 (1.7%)	1 (3.4%)
Deficient in GO knowledge/clinical management	2 (1.7%)	4 (13.8%)
Not enough surgery	9 (7.5%)	3 (10.3%)
Not enough exposure to feel prepared to care for large service	1 (0.8%)	2 (6.9%)
Impact of fellows	7 (5.8%)	1 (3.4%)

statistics, or scientific writing. In our survey, although nearly 85% of respondents wrote a manuscript and 100% of respondents participated in a research project in residency, only 50% reported receiving education on scientific writing. Participation in a research project does not entail structured education on basic statistics, results interpretation and scientific writing. For fellowship programs, conducting a “needs assessment” (Kern et al., 1998) of incoming fellows may identify those who could benefit from education in clinical research, statistics and writing.

The strengths of this study include use of a survey instrument used in numerous surgical subspecialties (Guntupalli et al., 2015) and the applicability of survey responses to the residency training process. The weaknesses of the study include the response rate; the overall response rate was 38.7% and could have affected the study findings as a result of non-response bias. However, this response rate is comparable to response rates in prior surveys of GO fellows (Connor et al., 2018; Moulton et al., 2017). A significant weakness is the recall bias of respondents that may have affected the study findings. Because 45% of the respondents were graduated fellows, their recollection of residency may carry more bias. However, there was not a significant difference in responses between current and graduated fellows. The application of the Likert scale to the survey responses may have led to measurement bias in the setting of assessing the beliefs and convictions of the respondents. Given that the survey queried current and former fellows on their perception and attitudes pertaining to their skills and exposure, the Likert scale was felt to be appropriate (Lovell and Brickman, 2013). There was no demographic information on physicians who did not respond to our survey, which prevented comparing non-responders to the survey respondents.

These survey results prompt an exploration of why there are perceived discrepancies between GO PDs and former OBG residents training in terms of preparedness for GO fellowship. This survey does not address whether the discrepancy reflects inadequate ability on the part of new fellows and/or unrealistic expectations on the part of GO fellowship PDs. The inclusion of a needs assessment tailored to the subspecialty at the beginning of the research and clinical years of fellowship, rather than assuming that all matched fellows have the skills expected by GO PDs, and the creation of an individualized learning plan, may help address this conundrum.

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Author contribution

R.U. and S.G. conceived and designed the analysis; collected the

data; participated in data interpretation; wrote the paper. A.R. and D.D. assisted in the conception and design of the analysis, data collection, and participated in data interpretation. J.S. assisted in the conception and design of the study, assisted with data collection, and performed the analysis.

All authors have approved the final manuscript.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.gore.2019.03.007>.

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