COVID-19 and gynecological cancer: a review of the published guidelines

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ABSTRACT
On March 11, 2020 the COVID-19 outbreak was declared a 'pandemic' by the World Health Organization. COVID-19 is associated with higher surgical morbidity and mortality. An array of guidelines on the management of cancer during this pandemic have been published since the first reports of the outbreak. This narrative review brings all the relevant information from the guidelines together into one document, to support patient care. We present a detailed review of published guidelines, statements, comments from peer-reviewed journals, and internationally recognized professional bodies and societies’ web pages (in English or with English translation available) between December 1, 2019 and May 27, 2020. Search terms included combinations of COVID, SARS-COV-2, guideline, gynecology, oncology, gynecological cancer. Recommendations for surgical and oncological prioritization of gynecological cancers are discussed and summarized. The role of minimally invasive surgery, patient perspectives, medico-legal aspects, and clinical trials during the pandemic are also discussed. The consensus is that elective benign surgery should cease and cancer surgery, chemotherapy, and radiotherapy should continue based on prioritization. Patient and staff face-to-face interactions should be limited, and health resources used efficiently using prioritization strategies. This review and the guidelines on which it is based support the difficult decisions currently facing us in gynecological cancer. It is a balancing act: limited resources and a hostile environment pitted against the time-sensitive nature of cancer treatment. We can only hope to do our best for our patients with the resources available to us.

BACKGROUND
On March 11, 2020 the World Health Organization Director-General declared the outbreak of COVID-19 a pandemic on the basis of its spread and severity. Early reports in the first nationwide analysis from China, published in mid-February 2020, purported to indicate a 3.5 times higher risk of needing mechanical ventilation, intensive care admission, or dying in patients with a history of cancer compared with those without. The ongoing CovidSurg project, a new international multi-center study, has provided data from 1129 patients with COVID-19 operated on during this time. Findings showed a high overall mortality rate of 24% and pulmonary complication rate of 51%. Most deaths followed pulmonary complications (83%), and elective surgery was associated with a 19% mortality risk. These data support the cancelation or postponement of elective surgeries during the ongoing pandemic. Global predictive modeling estimates that 28 404 603 operations will have been canceled or postponed worldwide during the peak 12 weeks of disruption due to COVID-19. It is estimated that, if countries increase their normal surgical volume by 20% following the resolution of the pandemic, it will take a median of 45 weeks to clear the backlog of operations resulting from the COVID-19 disruption.

There is an emergent need to better understand the impact of COVID-19 on the care of cancer patients requiring surgery. CovidSurg-Cancer and CovidSurg-Cancer Gynecological Oncology are international multi-center studies launched to understand this question. Data collection was ongoing for these studies at the time of submission of this review.

Since the beginning of March 2020 an array of guidelines, statements, and comments have been published on the management of gynecological cancer during the COVID-19 pandemic. We have reviewed and summarized the surgical and oncological prioritization strategies in circumstances where capacity is limited. Capacity varies between countries and even within each country.

Many recommendations are pragmatic deviations from ‘standard of care’ management, aiming to balance the risk of treatment and available resources during this pandemic. It remains to be seen how short-term and long-term oncological outcomes will be affected. Treatment escalation plans and patients’ wishes regarding resuscitation should therefore be discussed openly with patients for a range of different eventualities and documented in the medical notes. The guidelines reviewed here reflect choices made by clinicians during the current pandemic and help with the decision-making process.

METHODS
We performed electronic searches of Embase, Medline, and Google Scholar for guidelines, statements, or comments (in English or with English translation available) published between December 1, 2019 and May 27, 2020. Those published in peer-reviewed journals or on nationally/internationally recognized professional bodies’/societies’ web
pages were included (first guideline published on 14 March, 2020). Reference lists were hand-searched to identify any pertinent articles that had been missed. Search terms included combinations of: COVID, SARS-COV-2, guideline, gynecology, oncology, gynecological, cancer, and variant spellings. Comments, perspectives, and correspondence published in various journals have not been incorporated in this review.

RESULTS

Evolution of the guidelines

The first set of publicly available guidelines appeared in France. The French High Council for Public Health (Haut Conseil de Santé Publique) formally released their guidelines on March 14, 2020. These were followed by a series of guidelines/recommendations published by several national/international professional societies/bodies, as listed in Table 1. Due to the rapidly evolving nature of this pandemic, guidelines are based on expert opinion because of the lack of available robust scientific evidence.

Table 1 Timeline of guidelines

<table>
<thead>
<tr>
<th>General oncology guidelines</th>
<th>Date of issue/publication (year 2020)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haut Conseil de Santé Publique</td>
<td>March 14</td>
</tr>
<tr>
<td>National Institute for Health and Care Excellence</td>
<td>March 20</td>
</tr>
<tr>
<td>National Health Service (NHS)</td>
<td>March 23</td>
</tr>
<tr>
<td>American College of Surgeons (Statement)</td>
<td>March 24</td>
</tr>
<tr>
<td>Society of American Gastrointestinal and Endoscopic Surgeons &amp; European Association for Endoscopic Surgery</td>
<td>March 29</td>
</tr>
<tr>
<td>Italian Society of Surgical Oncology, Italian Association of Medical Oncology and Italian Association of Radiation Oncology joint statement</td>
<td>March 23</td>
</tr>
<tr>
<td>National Comprehensive Care Network</td>
<td>April 5 (accepted for publication March 16)</td>
</tr>
<tr>
<td>American Society of Clinical Oncology</td>
<td>April 28 (accepted for publication April 8)</td>
</tr>
<tr>
<td>Medical Oncology Group of Australia</td>
<td>April 16 (published May 13)</td>
</tr>
</tbody>
</table>

Gynecological cancer statements/guidelines

| British Gynaecological Cancer Society | March 22 (updated v2.0 April 13, v3.0 May 5) |
| Society of Gynecologic Oncology | March 23 |
| European Network of Gynaecological Oncological Trial Groups | March 23 |
| International Journal of Gynecological Cancer | March 27 (accepted March 24) |
| American Association of Gynecologic Laparoscopists (Statement) | March 27 |
| Australia New Zealand Gynecological Oncology Group | March 31 |
| European Society of Gynecological Oncology (ESGO) Statement | March 31 |
| Groupe de Recherche en chirurgie Oncologique et Gynécologique interest group of Collège National des Gynécologues Obstétriciens Français | April 1 |
| Society of European Robotic Gynecological Surgery | April 3 |
| Society of Gynecologic Oncology of Canada | April 7 |
| Italian Society for Colposcopy and Cervico-Vaginal Pathology | April 8 |
| British Society of Colposcopy and Cervical Pathology | April 9 |
| European Society of Medical Oncology | April (accessed April 19) |
| Asian Society of Gynecologic Oncology | May 8 |
| European Federation for Colposcopy (EFC)-European Society of Gynecologic Oncology (ESGO) | May |
Review

- Fever/severe acute respiratory syndrome coronavirus 2 (SARS-COV-2) screening for staff and visitors
- Social distancing
- Frequent disinfection of areas which are touched frequently such as door knobs, elevator buttons, or railings
- Limitation of family and friends visiting the hospital

Recommendations for outpatient clinics
- Minimize face-to-face appointments
- Telephone/video consultations
- Maintaining ‘social distancing’ in outpatient waiting areas
- Adequate protection equipment

Recommendations for healthcare personnel safety
- Personal protection equipment whenever and wherever applicable
- Staff training in using personal protection equipment
- Staff training in the identification of suspected COVID patients
- Ensuring that staff have access to psychological support
- Reassignment of clinical duties to administrative roles for immuno-compromised staff or those with significant co-morbidities
- Strict ‘stay at home when ill’ policy
- Improving awareness among professionals through regular webinars with a national and international presence to learn from others

Recommendations on inpatient management
- COVID designated wards/intensive care units/operating rooms/hospitals
- Blood bank balancing operating room transfusion needs with shortage of blood products due to a reduction in blood donation
- Pooling of resources such as shifting patients to COVID-free units/hospitals
- Restricting the number of visitors to ‘none’ or ‘single-only’
- In addition to changes in day-to-day practice relating to hospital visits and minimizing risk of infection, guidelines advise on prioritization of treatment when faced with low capacity in intensive care units and staff absence due to COVID-19 infection. As COVID-19 has had a global effect these guidelines vary, with some countries and societies defining priorities and others providing various options.

Surgical prioritization
The general consensus is that elective surgery for benign indications should cease during this pandemic. Recommendations for the surgical prioritization of gynecological cancer cases may be broadly divided into four main groups:

Priority level 1
1a Emergency required within 24 hours to save a life
1b Urgent required <72 hours
- Life-threatening conditions such as obstruction, bleeding, localized infection, spinal cord compression, anastomotic leak, burst abdomen, torsion, or rupture of suspected malignant pelvic masses, heavy bleeding from molar pregnancy.

Priority level 2
Elective surgery required <4 weeks with the expectation of cure prioritized based on the biology of the disease (expected growth rate in the case of cancer).

Priority level 3
Elective surgery that can be delayed for 10–12 weeks with no predicted negative outcome.

- Oncology patients with highest risk during this pandemic include: ≥65 years old, significant co-morbidities including cardiovascular disease, pulmonary disease, and diabetes mellitus, European Cooperative Oncology Group status ≥2, patients receiving cytotoxic chemotherapy.

Enhanced recovery pathways should be used to facilitate early patient discharge, thus limiting patient exposure to the hospital environment and maintaining capacity within the healthcare service.

The primary clinical benefits of implementing these protocols are shorter hospital length of stay and reduced post-operative complications (including respiratory complications) in low, medium, and highly complex gynecological oncology surgeries. These are desired outcomes, particularly during the pandemic when inpatient beds and intensive care unit beds are increasingly scarce. Surgical management should be delayed for at least 15 days/end of symptoms in patients with gynecological cancer presenting with COVID-19.

Patient perspectives
European Society of Gynecological Oncology (ESGO)-European Network of Gynecological Cancer Advocacy Groups (ENGAge) conducted a survey in 12 countries with 129 patient responses obtained. Patients were found to be more fearful of cancer progression (70.9%) than developing COVID-19. Only a minority of patients (18.3%) were concerned about visiting the oncologist or contracting COVID-19 from the hospital (17.5%). Many patients, however, had high level anxiety that the disruption and uncertainty resulting from the COVID-19 pandemic would lead to change of planned cancer treatment. In response to the concerns expressed by national gynecological cancer charities, the British Gynaecological Cancer Society produced a framework of care for women with gynecological cancer. This document outlines in lay terms recommendations for the treatment of gynecological cancer during the COVID-19 pandemic.

Minimally invasive surgery
Minimally invasive surgery (either laparoscopic or robotic) is associated with a reduced inpatient stay, reduced blood loss, and enhanced recovery, which may be particularly beneficial in patients with high body mass index. During the acquired immuno-deficiency syndrome (AIDS) epidemic in the 1990s, laparoscopic surgery was strongly encouraged over open surgery in patients infected with human immuno-deficiency virus (HIV). Despite this, the theoretical risk exists, with previous studies showing activated Corynebacterium, papillomavirus, and HIV detected in surgical smoke and four proven cases of occupational exposure and subsequent laryngeal infection by human papillomavirus (HPV). Currently, limited data on SARS-COV-2 suggest that the risk of transmission from laparoscopic gynecological procedures not involving the gastrointestinal tract is very low. Working with minimal staff and adopting safe distancing recommendations is feasible with minimally invasive surgery compared with open surgery. Where it is practicable and within the scope of the department and individual surgeon's experience, minimally invasive surgery should be considered due to the benefits of shortened...
hospital stay and improved recovery, potentially reducing exposure to nosocomial infection with SARS-CoV-2.

There are practical safety considerations that apply to minimally invasive surgery, but some of the recommendations also apply to surgery in general. These are listed below:

- Full personal protection equipment, including Filtering Face Piece-3/N-95 masks, shoe covers, impermeable gowns, protective head covering, gloves, and eye protection to be worn in theater at all times.\(^{30–32}\)
- Aim to reduce smoke/plume production:
  - Low power settings
  - Reduce desiccation time
  - Avoid ultrasonic dissectors and advanced bipolar devices as these can lead to particle aerosolization\(^{33}\)
  - Closed smoke evacuation/filtration system with ultra-low particulate air filtration capability\(^{33}\)
  - Various low-cost locally available smoke evacuation devices using high efficiency particulate air filters have been described from developing countries\(^{34}\)
  - Reduce venting of the pneumoperitoneum into the room; laparoscopic suction may be used to remove smoke and deflate the abdominal cavity prior to removing specimens through the vagina
- Use low intra-abdominal pressure 10–12 mmHg
- Avoid rapid desufflation, particularly when removing specimens or instruments
- Aim for tissue extraction with minimal carbon dioxide escape. Desufflate with closed smoke evacuation filtration system prior to extraction
- Minimize blood/fluid droplet spray or spread
- Minimize leakage of carbon dioxide from trocars. Check seals in reusable trocars\(^{32}\)
- Surgical patients should be screened pre-operatively for SARS-CoV-2
- If needed and possible, intubation and extubation should take place within a negative pressure room\(^{30}\)
- With departmental support and improved efficiency, a move towards same-day discharge can be made for many gynecological oncology procedures.\(^{35}\) Minimally invasive surgery is suited to the surgical management of early-stage endometrial cancer and remains the gold standard of care.\(^{15}\) Robotics may be used for urgent complex procedures that might be less feasible with conventional laparoscopy.\(^{31–36}\)

### Oncological treatment guidelines

Many of the recommendations listed above relating to surgical procedures also apply to oncological treatments. Outpatient follow-up has been changed in many hospitals to telephone and video consultations or patient initiated follow-up\(^{37}\); non-essential follow-up has been stopped, and other procedures such as blood tests are done locally or using a drive-through service.\(^{9}\) Oral medication is delivered home and hospital visits are minimized. Appointments are scheduled so few patients are waiting in the waiting rooms, and patients who are due to start immunosuppressive chemotherapy and are suspected of having COVID are offered screening. In hospitals with walk-in appointments, safe distancing and preventative COVID-19 etiquette are followed.\(^{11–38}\) Decisions regarding treatment are usually made by a multidisciplinary team and steps are taken to modify the chemotherapy regimen by using growth factors or shortening the length of chemotherapy.\(^{7,10,12,38}\)

### Chemotherapy

In situations where capacity is severely limited, the following guidelines apply\(^{12,14}\):
For patients with metastatic disease, treatment delays may lead to admission for symptom palliation, particularly in the absence of symptoms; consideration should include worsening performance status; however, chemotherapy for a platinum-resistant disease would be of low priority, particularly in the absence of symptoms; consideration should include how such delays may lead to admission for symptom palliation, which further stresses inpatient resources. 

Patients should undergo at least two new cycles of chemotherapy after their surgery. 

Test for Breast Cancer Antigen (BRCA) mutations, germline and somatic so that patients may access poly ADP ribose polymerase inhibitors 

Poly ADP ribose polymerase inhibitors should be started at the end of chemotherapy, if possible, patients may access Poly ADP ribose polymerase inhibitors before the opportunity for surgery arises. 

Consider the routine use of Filgrastim (granulocyte colony stimulating factor) to reduce the incidence of neutropenia in patients receiving combination therapy. 

Malignant germ cell tumors high priority if requiring chemotherapy. 

Priorities to high-grade disease (including ovarian cancer, sarcomas, gestational trophoblastic neoplasia, and type II endometrial cancers). Recurrent cancer patients with symptoms needing urgent treatment or end of life discussion. 

Where possible, chemotherapy for platinum-sensitive relapse should be considered for symptomatic patients and delayed, if possible, for patients without symptoms or with small-volume disease unlikely to lead to significant pathophysiological complications in the next 3 months. 

Utilization of chemotherapy regimens that will avoid frequent patient visits. 

For patients with metastatic disease, treatment delays may lead to worsening performance status; however, chemotherapy for a platinum-resistant disease would be of low priority, particularly in the absence of symptoms; consideration should include how such delays may lead to admission for symptom palliation, which further stresses inpatient resources. 

Alternative strategies to manage symptoms should be considered. 

For patients found to be COVID-19-positive, do not start chemotherapy until their symptoms resolve, they test negative (depending on resources). Advance care planning discussions should be documented during discussions with patients. This should include goals of care and end-of-life care. When chemotherapy is offered, a decision should be made together with patients, counseling about the risks of delaying chemotherapy versus the risks of developing COVID-19 while on treatment.

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Radiotherapies 

Prioritization for radiotherapy patients is based on principles similar to those in chemotherapy patients. Curative radiotherapy should be prioritized over adjuvant therapy for local disease control. Where adjuvant radiotherapy is likely to reduce local recurrence but not prolong survival, radiotherapy may be withheld following careful consideration and counseling. The recommendations are summarized below:

- Priority level 1: Rapidly growing tumors
- Priority level 2: Urgent palliative radiotherapy
- Priority level 3: Less aggressive tumors

### Table 3: Chemotherapy: ovarian cancer

<table>
<thead>
<tr>
<th>High&lt;sup&gt;1b&lt;/sup&gt;</th>
<th>Medium&lt;sup&gt;12&lt;/sup&gt;</th>
<th>Low&lt;sup&gt;62&lt;/sup&gt;</th>
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</thead>
</table>
| For advanced ovarian cancer, neoadjuvant chemotherapy may be preferred to primary cytoreductive surgery and be effective in delaying surgery and inpatient hospitalization. Interval surgery may then follow if local capacity permits, or in some centers clinicians may consider continuing to six cycles to delay surgery<sup>15,51</sup>.

Patients should undergo at least two new cycles of chemotherapy after their surgery.<sup>15</sup> Test for Breast Cancer Antigen (BRCA) mutations, germline and somatic so that patients may access poly ADP ribose polymerase inhibitors.

Poly ADP ribose polymerase inhibitors should be started at the end of chemotherapy, if possible, patients may access Poly ADP ribose polymerase inhibitors before the opportunity for surgery arises.<sup>16</sup> Consider the routine use of Filgrastim (granulocyte colony stimulating factor) to reduce the incidence of neutropenia in patients receiving combination therapy.<sup>7</sup>

Malignant germ cell tumors high priority if requiring chemotherapy.<sup>49</sup>

### Table 4: Surgery, chemotherapy and radiotherapy: endometrial cancer

<table>
<thead>
<tr>
<th>1b or High&lt;sup&gt;63&lt;/sup&gt;</th>
<th>2&lt;sup&gt;65&lt;/sup&gt; or Medium&lt;sup&gt;7&lt;/sup&gt;</th>
<th>3&lt;sup&gt;65&lt;/sup&gt; or Low&lt;sup&gt;7&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surgery</td>
<td></td>
<td></td>
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<tr>
<td>Hemorrhage&lt;sup&gt;7,63&lt;/sup&gt;</td>
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<tr>
<td>Peritonitis&lt;sup&gt;63&lt;/sup&gt;</td>
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<tr>
<td>Radiotherapy complications&lt;sup&gt;63&lt;/sup&gt;</td>
<td></td>
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<tr>
<td>Fistula/perforation&lt;sup&gt;63&lt;/sup&gt;</td>
<td></td>
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<tr>
<td>Post-operative bleeding/ureteric injury&lt;sup&gt;63&lt;/sup&gt;</td>
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<tr>
<td>Hydatiform mole curettage or hysterectomy&lt;sup&gt;64&lt;/sup&gt;</td>
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</table>

Chemotherapy and radiotherapy

- Adjuvant treatment after curative intent surgery

- High-risk or high-grade disease<sup>7</sup>
- Uterus confined disease<sup>63</sup>
- Grade 3 endometrioid / grade 2 p53 mutated/serous/carcinosarcoma/undifferentiated/clear cell<sup>16</sup>
- Known/suspicion of high-grade uterine sarcoma<sup>16</sup>

- Low-grade, early stage<sup>7</sup>
- Risk-reducing surgery in genetically predisposed<sup>63</sup>
- Complex atypical hyperplasia not controlled with hormonal therapy<sup>63</sup>
- Repair of asymptomatic fistula<sup>63</sup>
- Resection of slow growing central recurrence<sup>53</sup>
Radiotherapy is the first-line definitive treatment
Post-operative radiotherapy in known residual disease following surgery for rapidly growing tumors

Priority level 4
Palliative radiotherapy to reduce the burden on the healthcare service

Priority level 5
Adjuvant radiotherapy following complete resection of disease (<20% risk of recurrence at 10 years)

Other measures
Using biologically equivalent hypofractionated schedule to reduce hospital visits
Brachytherapy services to be continued as a priority
Personal protection equipment use during administration of radiotherapy
‘Clean’ radiotherapy teams working on rotation basis

Clinical trials
During the pandemic, recruitment to clinical trials has suffered. Many countries have put recruitment on hold and have prioritized COVID-19 research. Overarching principles that apply to all patients on a clinical trial are listed below:

The safety of patients in a clinical trial is of paramount importance
Telephone/video consultation should be utilized to monitor trial patients
Home delivery of medicines should be considered
Evaluate enrollment and treatment on clinical trials based on the availability of clinical and research support. Second opinions may be accomplished with the use of telemedicine as resources allow
Consider the COVID-19 burden and ability to enroll new patients on trial (safety, staffing resources including clinical trial nurses, data managers, and regulatory staff)

Clinical trials have been suspended in some centers while continuing in others, based on the severity of the pandemic and available resources. This forced variation in trial implementation may create imbalances in patient cohorts, especially in multi-center trials, potentially leading to bias that may affect the outcome of these trials.

Ovarian cancer
The diagnostic pathway in advanced ovarian cancer has changed in some centers as access to radiologically-guided tissue biopsies is limited, especially in centers where the numbers of COVID-19-positive patients are high. As a consequence, some centers have had to rely on ‘cytology alone’/cell block of cytology to confirm a diagnosis of advanced ovarian malignancy prior to commencing chemotherapy.

Table 2 shows the surgical priorities adopted by many gynecological cancer surgery groups according to the urgency of the operation.

Similar priority tables and guiding principles have been set up for chemotherapy patients. This will vary depending on local capacity. Table 3 shows recommended prioritization for chemotherapy for ovarian cancer. Some of the recommendations relate to changing intravenous maintenance treatment to oral treatments. As an example, some guidelines prioritize Poly ADP ribose polymerase inhibitors over bevacizumab as these can be given safely once the correct dose is established. Most patients require monitoring for the first 2–3 months as bone marrow suppression is commonly seen; after that period most centers monitor blood tests every 1–2 months and the need for frequent visits can be safely reduced.

Hyperthermic intra-peritoneal chemotherapy is strongly discouraged.

Endometrial cancer
Surgical, chemotherapy, and radiotherapy prioritization is summarized in Table 4.

In cases where capacity does allow, standard management should continue.
In early-stage disease, delay methods such as using the levonorgestrel-releasing intra-uterine system or oral progesterones may be used. In advanced stage or recurrent disease, the following options can be considered:

Megestrol/megestrol alternating with tamoxifen (endometroid histology/estrogen, progesterone receptor positive); oral everolimus/letrozole
Neoadjuvant chemotherapy
Similarly, in stage IV disease in asymptomatic patients, treatment may be delayed.
Options of treatment need to be carefully discussed with patients and adjusted to the risk group as outlined below:

Low risk
Grade 1: Hormonal therapy or defer surgery for 1–2 months (grade 1–2 stage 1A, MRI confirmed)

High risk
Grade 2/3: hysterectomy and bilateral salpingo-oophorectomy±sentinel lymph node assessment if available.
In patients who are high anesthetic risk, consider radiotherapy instead of surgery.

Gestational trophoblastic neoplasia
Trophoblastic tumors are considered curable but have a high metastatic potential. These patients should be treated without delay. Patients with low-risk trophoblastic tumors can be treated with methotrexate at home. Patients with high-risk tumors should be administered multi-drug regimens without delay (chemotherapy with curative intent).
Conventional curettage should be offered as it is both diagnostic as well as a therapeutic procedure (~40% of patients subsequently do not require chemotherapy).
Hysterectomy may be offered, especially if childbearing is not desired.
Patients with high-risk disease should be offered inpatient multi-drug regimens.

Pre-invasive cervical disease
Recommendations from the guidelines on the management of pre-invasive cervical lesions are outlined in Figure 1.

Cervical cancer
Despite the unique challenges that this pandemic puts on diagnostic and surgical services, it is imperative that centers can perform surgery with curative intent for early-stage disease. Table 5 summarizes suggested prioritization for surgery and Table 6 for chemotherapy and radiotherapy.
Low-grade cervical cancer screening tests (High-risk HPV test positive with normal cervical cytology, Low grade Squamous Intraepithelial Neoplasia, Atypical Squamous Cell of Undetermined Significance) may have a postponement of diagnostic evaluations up to 6-12 months.

High-grade cervical cancer screening tests (HSIL, Atypical Squamous Cells-High grade, Atypical Glandular Cell-Not Otherwise Specified) should have documented attempts to contact and diagnostic evaluation scheduled within three months.

High-grade cervical disease without the suspected invasive disease (HSIL, Cervical Intraepithelial Neoplasia-2, Vaginal Intraepithelial Neoplasia 2-3; vulvar HSIL or differentiated Vulvar Intraepithelial Neoplasia) should have documented attempts to contact and procedures scheduled within three months.

Suspected invasive disease (Atypical Glandular Cell –Favoring Neoplasia, Endocervical Adenocarcinoma In Situ, Squamous Cell Carcinoma, Adenocarcinoma) should have contact attempted within two weeks and evaluation within 2 of that contact (4 weeks from the initial report or referral).

Virtual consultations, self-sampling of HPV, Tele/Digital colposcopy has a renewed role during ongoing pandemic. Detailed information regarding colposcopy and outpatient surgery of the lower genital tract during the COVID-19 pandemic can be found in statements and guidelines released by several societies recently.

**Figure 1** Pre-invasive cervical lesions.

Brachytherapy is an essential component of the treatment for cervical cancer, with poorer outcomes resulting when it is not used. Brachytherapy should be prioritized whenever possible.\(^{17,41}\)

**Vaginal cancer**

Most patients with vaginal cancer present at an advanced stage. Treatment is based around radiotherapy/chemotherapy/brachytherapy treatment. The added benefit of lymph node staging will be patient-dependent based on disease stage, location, and results of imaging investigations.\(^{15}\) For the majority of cases, prioritization of treatment of vaginal cancer is as for cervical cancer.

**Vulvar cancer**

If all surgery, including cancer surgery, is suspended or a patient is not suitable for surgery, radical radiotherapy with concurrent chemotherapy is the treatment of choice. Chemotherapy may be omitted for elderly patients or those with co-morbidities.\(^{31}\)

### Table 5  Surgery: cervical cancer

<table>
<thead>
<tr>
<th>1b(^7) or High(^{56})</th>
<th>2(^7) or Medium(^{56})</th>
<th>3(^7) or Low(^{56})</th>
</tr>
</thead>
<tbody>
<tr>
<td>► Life-threatening hemorrhage with failed conservative measures, especially surgery likely curative(^{7,56})</td>
<td>► Early-stage (unspecified)(^7,51)</td>
<td>► Low volume cervical cancer completely excised at loop excision(^7)</td>
</tr>
<tr>
<td>► Peritonitis(^{56})</td>
<td>► Stage 1A, 1B1–IIA: radical hysterectomy ± bilateral salpingo-oophorectomy + lymphadenectomy (level not specified)(^{51,56})</td>
<td>► Cervical intra-epithelial neoplasia 3 conisation(^{56})</td>
</tr>
<tr>
<td>► Radiotherapy complications(^{56}) (fistula/perforation)</td>
<td>► Stage 1A: trachelectomy/hysterectomy ± sentinel lymph node sampling (postpone 2 months)(^{51,56})</td>
<td>► Repair of asymptomatic fistula(^{56})</td>
</tr>
<tr>
<td>► Post-operative bleeding/ureteric injury(^{29})</td>
<td></td>
<td>► Resection of slow growing central recurrence(^{56})</td>
</tr>
<tr>
<td></td>
<td></td>
<td>► Pelvic exenteration (consider postponing)(^{36})</td>
</tr>
</tbody>
</table>

**DISCUSSION**

Restrictions imposed during lockdown,\(^{59}\) including advice over social distancing and self-isolation, have reduced access to healthcare services. Many of the guidelines focus on limiting patient and staff interactions by limiting the number and length of clinical visits, and thus limiting exposure. Delays and non-standard treatment pathways will undoubtedly be resorted to. Delays could be detrimental to patients’ health and, in the worst cases, lead to worsening performance and missing the treatment window.\(^{10}\)

Multidisciplinary team outcomes should document what the standard of care is and how it has been modified due to the COVID-19 pandemic. When surgery is offered, a decision should be made together with patients, counselling about the risks of delaying surgery versus the risks of increased mortality and morbidity from developing COVID-19 peri-operatively in hospital. A supplementary consent form describing the increased mortality and morbidity
associated with COVID-19 disease around the time of cancer treatment, along with the option of deferring surgery or non-surgical treatments, can be used in addition to the usual consent form. The potential of worsening survival if treatment is delayed should be outlined to patients. The options of deferring surgery or non-surgical treatments, along with the option of deferring surgery or non-surgical treatments should be included and clearly documented during the informed consent process.

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