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# Quality indicators for advanced ovarian cancer surgery from the European Society of Gynaecological Oncology (ESGO): 2020 update

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In 2016, the European Society of Gynaecological Oncology (ESGO) developed a list of quality indicators (QIs) for advanced ovarian cancer surgery with the aim of helping and auditing clinical practice.[1] The QIs were based on evidence-based research, meetings of a multidisciplinary International Development Group, an internal validation of the targets and scoring system, and an external review process involving physicians and patients. The ultimate plan was for QIs to be used for self-assessment, quality assurance programs, and for certification of centers.

More recently, a number of amendments were made after several years of implementation of our initially defined QIs into clinical practice and accreditation of centers. This was done in order to emphasize and focus on the surgical scores. The amendments were defined and proposed during a new meeting of the interdisciplinary group that aimed to target the clinical significance of the QIs and assessed evidence after implementation of the initial scoring system.

The definitions and specifications of the actual QIs remain unchanged and have been previously described in detail.[1] Also, the total 40 score, with a 32 cut-off, is maintained.

The process of definitions and modifications are summarized as follows. The QIs for advanced ovarian cancer surgery were developed using a four-step evaluation process based on physical meetings of the multidisciplinary committee. The process was founded on the following values: (1) multidisciplinary international expert panel, (2) evidence-based medicine and expert consensus, (3) patient engagement, (4) external review process, (5) structured format to present QIs, and (6) strict assessment of conflicts of interests. This development process is outlined in Table 1.

Each of the QIs is categorized as a structural, process, or outcome indicator. The specifications of how these are measured are outlined in Table 2. The time frame for assessment criteria is set as the last calendar year. In addition to the actual measurement of the indicator, a target indicates the level that each center should aim to meet such quality requirements. Targets are based on available scientific evidence, personal experience of group members, on expert consensus, and on feedback from external reviewers. Quality indicators 1 to 3 deal with caseload in the center, training, skills, and experience of surgeons and

**Table 1** Development process: a four-step evaluation process (unmodified, as per original manuscript[1])

| Evaluation step | Development process framework |
|---|---|
| Evaluation #1 | Nomination of multidisciplinary IDG members. Identification of potential QIs (n=15). Identification of scientific evidence. IDG members independently evaluate the relevance and feasibility of each QI. |
| Evaluation #2 | IDG members discuss each potential QI (first meeting). Ten QIs were retained. Synthesis of scientific evidence. |
| Evaluation #3 | External international panel of physicians and patients evaluates the relevance and feasibility of retained QIs (international review). IDG members discuss and integrate the comments of the international reviewers (second meeting). A scoring system is designed. |
| Evaluation #4 | Internal validation of the scoring system. The workgroup members complete a self-assessment form. Definition and target of criteria not universally met by expert centers are modified (third meeting). |

IDG, interdisciplinary group; QI, quality indicator.



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**Table 2** Presentation of quality indicators

| | |
|---|---|
| **QI 1: Rate of Complete Surgical Resection** | |
| Type | Outcome indicator |
| Description | Complete abdominal surgical resection is defined by the absence of remaining macroscopic lesions after careful exploration of the abdomen. Whenever feasible, localized thoracic disease is resected. Surgery can be decided upfront, or planned after neoadjuvant chemotherapy. However, the quality assurance program must take into account that patients who can be operated upfront with a reasonable complication rate benefit most from primary debulking surgery. |
| Specifications | 1. Complete resection rate (all patients):<br>– Numerator: number of patients with advanced ovarian cancer undergoing complete surgical resection<br>– Denominator: all incoming patients with advanced ovarian cancer<br>2. Proportion of stage III-IV patients undergoing upfront surgery:<br>– Numerator: stage III-IV patients undergoing primary cytoreductive surgery<br>– Denominator: all incoming patients with untreated advanced ovarian cancer |
| Target(s) | 1. Complete resection rate (all patients):<br>– Optimal target: >65%<br>– Minimum required target: >50%<br>2. Proportion of primary debulking surgeries (stage III-IV patients): >50% |
| Scoring rule | 1. 8 if the optimal target is met, 3 if the minimum required target is met<br>2. 3 if the target is met |
| **QI 2: Number of Cytoreductive Surgeries Per Center and Per Surgeon Per Year** | |
| Type | Structural indicator (number of upfront or interval cytoreductive surgeries performed per center)<br>Process indicator (number of surgeries per surgeon per year) |
| Description | Only surgeries with an initial objective of complete cytoreduction are recorded. Exploratory endoscopies, exploratory laparotomies, or surgeries limited to tissue biopsy that do not include at least a bilateral salpingo-oophorectomy (if applicable), hysterectomy (if applicable), and a comprehensive peritoneal staging including omentectomy are not included. |
| Specifications | Numerator:<br>1. Number of cytoreductive surgeries as defined previously performed per center per year<br>2. Number of cytoreductive surgeries as defined previously performed per surgeon per year. Secondary and tertiary procedures are accepted.<br>Denominator: not applicable |
| Target(s) | 1. Number of surgeries performed per center per year:<br>– Optimal target: n≥100<br>– Intermediate target: n≥50<br>– Minimum required target: n≥20<br>2. ≥95% of surgeries are performed or supervised by surgeons operating on at least **20** patients a year |
| Scoring rule | 1. 7 if the optimal target is met, **4** if the intermediate target is met, 1 if the minimum required target is met<br>2. 5 if the target is met |
| **QI 3: Surgery Performed by a Gynecologic Oncologist or a Trained Surgeon Specifically Dedicated to Gynecological Cancer Management** | |
| Type | Process indicator |
| Description | Surgery is performed by a certified gynecologic oncologist or, in countries where certification is not organized, by a trained surgeon dedicated to the management of gynecologic cancer (accounting for more than 50% of his/her practice) or having completed an ESGO-accredited fellowship. Skills to successfully complete abdominal and pelvic surgery procedures necessary to achieve complete cytoreduction must be available. |
| Specifications | Numerator: Number of patients with advanced ovarian cancer operated on by a specialist (as defined previously)<br>Denominator: all patients undergoing surgery for advanced ovarian cancer |
| Targets | ≥90% |
| Scoring rule | 3 if the target is met |
| **QI 4: Center Participating in Clinical Trials in Gynecologic Oncology** | |
| Type | Structural indicator |
| Description | The center actively accrues patients in clinical trials in gynecologic oncology. |

Continued

**Table 2** Continued

| | |
|---|---|
| **QI 1: Rate of Complete Surgical Resection** | |
| Specifications | Numerator: not applicable<br>Denominator: not applicable |
| Targets | Not applicable |
| Scoring rule | three if the center actively accrues patients in clinical trials in gynecologic oncology |
| **QI 5: Treatment Planned and Reviewed at a Multidisciplinary Team Meeting** | |
| Type | Process indicator |
| Description | The decision for any major therapeutic intervention has been taken by a multidisciplinary team including at least a surgical specialist as defined previously (QI 2 and QI 3), a radiologist, a pathologist (if a biopsy is available), and a physician certified to deliver chemotherapy (a gynecologic oncologist in countries where the subspecialty is structured and/or a medical oncologist with special interest in gynecologic oncology). |
| Specifications | Numerator: Number of patients with advanced ovarian cancer for whom the decision for therapeutic intervention(s) has been taken by a multidisciplinary team<br>Denominator: all patients with advanced ovarian cancer undergoing therapeutic intervention(s) |
| Targets | ≥95% |
| Scoring rule | 3 if the target is met |
| **QI 6: Required Pre-operative Workup** | |
| Type | Process indicator |
| Description | Unresectable parenchymal metastases have been ruled out by imaging. Ovarian and peritoneal malignancy secondary to gastrointestinal cancer has been ruled out by suitable methods, for example, serum CA125 and CEA levels, and/or by biopsy under radiologic or laparoscopic guidance. |
| Specifications | Numerator: Number of patients with advanced ovarian cancer who had undergone cytoreductive surgery and who were offered minimum pre-operative workup as defined previously<br>Denominator: all patients with suspected advanced ovarian cancer who underwent cytoreductive surgery |
| Targets | ≥95% |
| Scoring rule | 1 if the target is met |
| **QI 7: Pre-operative, Intra-operative, and Post-operative Management** | |
| Type | Structural indicator |
| Description | The minimal requirements are (1) intermediate care facility, and access to an intensive care unit in the center are available and (2) an active peri-operative management program is established.* |
| Specifications | Numerator: not applicable<br>Denominator: not applicable |
| Targets | Not applicable |
| Scoring rule | 1 if the minimal requirements are met |
| **QI 8: Minimum Required Elements in Operative Reports** | |
| Type | Process indicator |
| Description | Operative report is structured. Size and location of disease at the beginning of the operation must be described. All areas of the abdominal cavity† must be described. If applicable, the size and location of residual disease at the end of the operation, and the reasons for not achieving complete cytoreduction, must be reported. |
| Specifications | Numerator: Number of patients with advanced ovarian cancer undergoing cytoreductive surgery who have a complete operative report that contains all required elements as defined previously<br>Denominator: all patients with advanced ovarian cancer undergoing cytoreductive surgery |
| Targets | 90% |
| Scoring rule | 3 if the target is met |
| **QI 9: Minimum Required Elements in Pathology Reports** | |
| Type | Process indicator |
| Description | Pathology report contains all the required elements listed in the ICCR histopathology reporting guide.‡§ |

Continued

**Table 2** Continued

| | |
|---|---|
| **QI 1: Rate of Complete Surgical Resection** | |
| Specifications | Numerator: Number of patients with advanced ovarian cancer undergoing cytoreductive surgery who have a complete pathology report that contains all required elements as defined in ICCR histopathology reporting guide<br>Denominator: all patients with advanced ovarian cancer undergoing cytoreductive surgery |
| Targets | >90%. The tolerance within this target reflects situations where it is not possible to report all components of the data set due to poor quality of specimen |
| Scoring rule | 1 if the target is met |
| **QI 10: Structured Prospective Reporting of Post-operative Complications** | |
| Type | Outcome indicator |
| Description | Data to be recorded are reoperations, interventional radiology, readmissions, secondary transfers to intermediate or intensive care units, and deaths. |
| Specifications | Numerator: Number of recorded serious post-operative complications or deaths occurring among patients with advanced ovarian cancer who have undergone cytoreduction<br>Denominator: all complications occurring among patients with advanced ovarian cancer who have undergone cytoreduction |
| Targets | Optimal target: 100% of complications are prospectively recorded<br>Minimum required target: selected cases are discussed at morbidity and mortality conferences |
| Scoring rule | 3 if the optimal target is met, 1 if the minimum required target is met |

Updated scoring system is indicated by bold type.
*Details of peri-operative management include (non-exhaustive list) pre-operative hemoglobin optimization and iron deficit correction; correction of denutrition and immunonutrition according to the current guidelines; fluid management, involving a goal-directed therapy (GDT) policy rather than liberal fluid therapy without hemodynamic goals. However, the superiority of GDT compared with restrictive fluid strategy remains unclear. There is no recognized standard method of monitoring; pain management, including in the absence of contraindication; the use of epidural analgesia to avoid opioids; although routine pre-medication is no longer recommended, prevention of post-operative nausea and vomiting should be systematic.
†Ovaries, tubes, uterus, pelvic peritoneum, paracolic gutters, anterior parietal peritoneum, mesentery, peritoneal surface of the colon and bowel, liver, spleen, greater and lesser omentum, porta hepatis, stomach, Morrison pouch, lesser sac, undersurface of both hemidiaphragms, pelvic and aortic nodes, and, if applicable, pleural cavity.
‡https://www.rcpa.edu.au/Library/Practising-Pathology/ICCR/Cancer-Datasets
§McCluggage WG, Judge MJ, Clarke BA, et al. Data set for reporting of ovary, fallopian tube and primary peritoneal carcinoma: recommendations from the International Collaboration on Cancer Reporting (ICCR). *Mod Pathol* 2015;28:1101–22.
CEA, carcinoembryonic antigen; ESGO, European Society of Gynaecological Oncology; ICCR, International Collaboration on Cancer Reporting; QI, quality indicator.

the surgical team. Quality indicators 4 to 6 are related to the overall management of patients with advanced ovarian cancer. Quality indicator 7 addresses the value of adequate anesthesiology and peri-operative care to assure an optimal surgical outcome, focusing on not only the reduction of surgical morbidity but also optimization of facility and personnel to appropriately manage complications. Quality indicators 8 to 10 emphasize the need for a complete and transparent flow of information on the management and surgical outcome of patients, which encompasses information documentation, communication with consultants and colleagues, assessment of quality, and monitoring of improvement.

Each QI is associated with a score, and an assessment form is required (Table 3). The goals of the form are to support the self-assessment, or the external assessment, of a given institution. The sum of the individual scores being 40, it was decided that an institution meeting 80% of the score (score 32) provides satisfactory surgical management of patients with advanced ovarian cancer.

Summary of changes:

- The scoring of the criteria 3, 4, 8, and 10 is maintained.
- The rating of the other criteria is modified in favor of purely surgical items: the score of the criterium 5 is reduced to 2. The scores of the criteria 6, 7, and 9 are reduced to 1 each.
- The seven (7) points made available after implementation of the reduced score are assigned as follows:
  - Criterium 1.1: score increased to 8 (**+3**) if the optimal target is met (rates of complete cytoreduction over 65%)
  - Criterium 2.1: score increased to 7 (**+2**) if the optimal target is met (≥100 surgeries performed per center per year) and to score 4 (**+1**) if the intermediate target is met (50–99 surgeries performed per center per year)
  - Criterium 2.2: the target is modified as follows: "95% of surgeries performed by surgeons operating at least 20 patients a year" with a score 5 (**+2**).

There is ample evidence that centralization of care results in improved overall oncologic outcomes. ESGO has developed a number of criteria that provide centers ith accreditation for ovarian cancer surgery based on parameters that will distinguish centers with the classification of either 'Standard Accreditation' or 'Center of Excellence'. Those centers accredited as a Center of Excellence may then build a network for education, training, and research. These criteria are outlined in Box 1.

The new scores are presented in detail on the ESGO website (https://www.esgo.org/ovarian-surgery-certification/) and are valid for any new accreditation of a center for ovarian cancer surgery.

**Table 3** Self-assessment form with updated scoring system

| Quality indicators | Targets (tick if applicable) | Scoring points |
|---|---|---|
| 1.1 Rate of complete surgical resection | >65% | 8 (**+3**) |
| | 51%–65% | 3 |
| | ≤50% | 0 |
| 1.2 Rate of primary debulking surgeries | ≥50% | 3 |
| | <50% | 0 |
| 2.1 Number of cytoreductive surgeries performed per center per year | ≥100 | 7 (**+2**) |
| | 50–99 | 4 (**+1**) |
| | 20–49 | 1 |
| 2.2 Surgeries supervised or performed by surgeons operating at least **20** patients a year | ≥95% | 5 (**+2**) |
| | <95% | 0 |
| 3 Surgery performed by a gynecologic oncologist or a trained surgeon specifically dedicated to gynecological cancers management | ≥90% | 3 |
| | <90% | 0 |
| 4 Center participating in clinical trials in gynecologic oncology | Yes | 3 |
| | No | 0 |
| 5 Treatment planned and reviewed at a multidisciplinary team meeting | ≥90% | 2 (**-1**) |
| | <95% | 0 |
| 6 Required preoperative workup | ≥95% | 1 (**-2**) |
| | <95% | 0 |
| 7 Preoperative, intraoperative, and postoperative management | Yes | 1 (**-2**) |
| | No | 0 |
| 8 Minimum required elements in operative reports | ≥95% | 3 |
| | <90% | 0 |
| 9 Minimum required elements in pathology reports | ≥90% | 1 (**-2**) |
| | <90% | 0 |
| 10. Structured prospective reporting of postoperative complications | All complications are prospectively recorded | 3 |
| | There is no prospective complication database but selected cases are discussed at morbidity and mortality conferences | 1 |
| | Other situations | 0 |

The bold numbers in parentheses indicate differences from the previous scoring system.

The ESGO certification for advanced ovarian cancer surgery is an award attributed to institutions that offer patients the specific skills, experience, organization, and dedication that are required to achieve optimal levels of surgical care.

**Box 1 Modified center criteria for European Society of Gynaecological Oncology (ESGO) certification for ovarian cancer surgery: (A) Standard Accreditation and (B) Center of Excellence**

### A. Entry criteria for standard ESGO certification for ovarian cancer surgery (*all criteria must apply*)

- 24 complete surgeries per year in advanced stage III and IV ovarian cancer over the last 3 years (a total of 72 over the 3-year period accepted, at least 20 in the last year)
- 12 complete primary cytoreductive surgeries per year in advanced stage III and IV ovarian cancer over the last 3 years (36 over the 3-year period accepted, at least 10 in the last year)
- Secondary and tertiary surgeries for recurrences or palliative procedures are not included
- Submission of six operation and pathology reports randomly selected from the submitted database by the ESGO secretariat: three reports will be from the last year (Year 3), two reports from Year 2 and one from Year 1 from the evaluation period.

### B. Additional requirements for ESGO certification for ovarian cancer surgery as a Center of Excellence (*all criteria must apply*)

- Publications: three articles on ovarian cancer per year **authored by a gynecological surgical oncology member** of the team over the last 3 years, including at least one article as first or last author over the entire period
- Number of surgeries per year: 50 complete surgeries each year in stage III or IV disease (no exceptions) over a period of 3 years. Recurrent or palliative surgeries are not considered.

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