Expectations and preferences of patients with primary and relapsed ovarian cancer to maintenance therapy: A NOGGO/ENGOT-ov22 and GCIG survey (Expression IV)

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HIGHLIGHTS
- Patients with ovarian cancer were motivated to accept maintenance therapy with a longer duration, and most preferred oral administration.
- Patients with ovarian cancer were willing to accept maintenance therapy of prolonged duration and preferred oral administration.
- There is still a gap between the efficacy of maintenance therapy and patient expectations.

ABSTRACT
Background Maintenance therapy induces remission and prolongs disease free interval in primary and recurrent ovarian disease. For the treatment decision making process, aspects of quality of life and patients’ preferences are crucial, despite the fact that scientific data are lacking. Therefore, we conducted this European-wide study in patients with ovarian cancer.

Methods A 25 item questionnaire was provided to ovarian cancer patients via the internet or as a paper version in 10 European countries (Austria, Belgium, France, Germany, Italy, Romania, Slovenia, Finland, Turkey, and Spain). Data recorded were demographics, tumor stage, therapy after first-line and recurrent disease, preferences for administration, and expectations concerning maintenance therapy.

Results Overall, 1954 patients participated from September 2013 to March 2016; 42% had recurrent disease. Most patients (98%) with primary epithelial ovarian cancer underwent surgery followed by chemotherapy (91%). Almost one-third of participants (29%) were receiving maintenance therapy whereas 45% had only heard of it. For 70% of patients with primary epithelial ovarian cancer, they heard about maintenance therapy from their doctor, 10% heard about maintenance therapy from other patients, and 8% from the internet. The main source of information about maintenance therapy in patients with epithelial ovarian cancer relapse was from the treating physician (72%), from other patients (8%), and from the internet (7%). For patients undergoing maintenance therapy, the four most disturbing adverse effects were polyneuropathy (37%), nausea (36%), hair loss (34%), and vomiting (34%). The main objective of maintenance treatment, as perceived by patients, was to increase the chances of cure (73%), improvement in quality of life (47%), and delay in tumor growth (37%). Many patients were willing to undergo maintenance therapy until tumor progression (38%) and 39% would prefer oral administration. No significant differences were detected in the cross country subanalysis regarding expectations of maintenance therapy and patients with primary or relapsed ovarian cancer.

Conclusion Patients with ovarian cancer were willing to accept maintenance therapy of prolonged duration and preferred oral administration. There is still a gap between the efficacy of maintenance therapy and patient expectations. Patients need more information on the adverse effects and treatment goals of maintenance therapy to avoid misunderstandings.

INTRODUCTION
Ovarian cancer is the leading cause of cancer associated death and is associated with major disease and treatment related morbidity.1 2 The current therapeutic standard entails surgical cytoreduction followed by platinum based chemotherapy. However, most patients with advanced stage will have recurrence of the disease. Apart from tumor control, aspects of quality of life are the main objectives of cancer therapy.2 3

More recently, new targeted therapies, such as antiangiogenesis agents like bevacizumab,4 5 or inhibitors of the enzyme poly ADP ribose polymerase like niraparib,6 olaparib,7 and rucaparib,8 have been established as routine therapy in patients with epithelial ovarian cancer with a favorable impact on progression free survival. Impact on overall survival is yet to be demonstrated.4–8 Furthermore, no direct comparison of maintenance therapies has been performed in randomized studies. Different studies have shown that patient preferences and expectations may influence...
patient compliance and quality of life. Because data are lacking in these areas, we designed an international survey.

METHODS
The collected data are intended to provide a better understanding of patient needs and thereby improve compliance with therapy. The survey ‘Expression IV’ is a concept of the working group Supportive Therapies of the North-Eastern German Society for Gynecological Oncology (www.NOGGO.de) and has been conducted within the European Network for Gynecological Oncological Trial Groups (https://www.esgo.org/network/engot/) and Gynaecologic Cancer Intergroup (www.GCIG.org). The questionnaires were reviewed by the study groups of the European Network of Gynecological Oncological Trial Groups (ENGOT) and were translated into the respective national languages by certified translators, including validation by a bilingual physician.

Adult inpatients and outpatients with ovarian, fallopian tube, or primary peritoneal cancer (primary and recurrent disease) were invited to participate in the survey. The questionnaire was available as a paper version as well as online (via www.expression4.net) and patients selected their preferred option. With 25 questions, the questionnaire consisted of two parts: the basic sheet (patient’s characteristics) and the progress sheet (communication with medical staff, and patients’ expectations and preferences regarding maintenance therapy). In an interdisciplinary workshop with gynecologists, oncologists, statisticians, psychologists, nurses, and representatives of self-help organizations, the survey was implemented. Different studies on the topic were used as a basis for discussion and the questionnaire. The questions were answered as multiple choice, free text, or on a scale of 1–10. The survey was tested on 20 patients for comprehension and readability. The study was approved by each charité ethic committees and the respective national ethics committees. The survey contained a brief explanation and information on the contents of the survey and data protection.

All results are presented as frequency (%) for categorical variables and median (range) for continuous variables. Continuous variables were compared with the Kruskal–Wallis test or the Mann–Whitney U test, ordinal variables with Kendall’s tau b, and categorical variables with the χ² test. Nominal two sided p values are reported, with statistical significance set to p<0.05. All data were analyzed using IBM SPSS Statistics release 23.0 (SPSS Inc, an IBM Company, Chicago, Illinois, USA).

RESULTS
A total of 1954 participants from 10 different countries were included in the study (Germany n=539 (27.6%), Turkey n=420 (21.5%), France n=371 (19%), Austria n=238 (12.2%), Slovenia n=147 (7.5%), Belgium n=122 (6.2%), Romania n=75 (3.8%), Italy n=32 (1.6%), Finland n=8 (0.4%), and Spain n=2 (0.1%). Most patients used the hardcopy version (96.2% hardcopy version vs 2.8% online version). Sixty-two per cent of patients were aged 51–70 years, 51.9% with FIGO stage I, 5.5% with FIGO stage II, 30.8% with FIGO stage III, and 12.9% with FIGO stage IV. The majority of participants had primary ovarian cancer (51.9%) compared with recurrent disease; 6.5% were not evaluable for response (Table 1). Of those patients with recurrent disease, 53.9% reported relapse within 12 months after initial chemotherapy, 26.7% after 6–12 months, and 19.4% had a relapse within 6 months after chemotherapy. Almost all patients with primary epithelial ovarian cancer underwent primary debulking surgery (98.4%) followed by chemotherapy (90.7%), and 64.3% stated they were currently receiving therapy. Participants were asked about regular intake of oral medications for comorbidities for non-cancer conditions. Two thirds (61.4%) reported taking tablets regularly (<3 tablets per day, 30%; 3–5 tablets per day, 18%;>5 tablets per day, 9%) and most patients (90.3%) reported no issues regarding intake. Of the 9.7% reporting problems, 23.4% stated that the tablets were ‘too big’, 23.4% ‘too many’, 16.9% reported ‘forgetting to take’, and the remaining 4.7% of patients ‘did not believe the tablet was effective’. Most patients described their health status under maintenance therapy as ‘well’ (35.2) or ‘neutral’ (23.4%), whereas only a few described their health status as ‘bad’ (8.1%) or ‘very bad’ (1.6%).

We found that 40.5% of patients with primary epithelial ovarian cancer reported having heard about maintenance therapy and

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Table 1 Patient characteristics

| Characteristic | % of patients (n=1954) |
|----------------|------------------------|
| Age            |                        |
| 18–50 years    | 19.5                   |
| 51–70 years    | 62.0                   |
| 71–90 years    | 18.5                   |
| Stage of disease |                      |
| Primary ovarian cancer | 51.9          |
| Relapsed ovarian cancer | 41.6          |
| Unknown        | 6.5                    |
| FIGO stage at primary disease |        |
| I-II           | 14.3                   |
| III-IV         | 43.7                   |
| Unknown        | 32.1                   |
| Surgery        | 96.1                   |
| Chemotherapy   | 94.3                   |
| Current treatment |                    |
| Yes            | 64.3                   |
| No             | 35.0                   |
| Unknown        | 0.7                    |
| Living situation |                      |
| Not alone      | 81.7                   |
| Alone          | 18.3                   |
| Tablets for comorbidities | 61.4    |
| Maintenance therapy |                |
| Yes            | 29.3                   |
| No             | 57.9                   |
| No answer      | 12.8                   |

FIGO, International Federation of Gynecology and Obstetrics.
Table 2  Personal objective in choosing maintenance therapy (multiple answers were allowed)

| Objective                               | N (%) (n=1782 participants) |
|-----------------------------------------|-------------------------------|
| Increasing the chance of cure           | 1292 (72.5)                  |
| Improvement in quality of life          | 831 (46.6)                   |
| Delaying tumor progression              | 650 (36.5)                   |
| No deterioration in quality of life     | 592 (33.2)                   |
| Shrink the tumor                        | 579 (32.5)                   |
| Decrease in CA-125                      | 445 (25)                     |
| Other                                   | 85 (4.8)                     |

70.3% of these patients heard about maintenance therapy from doctors, 9.9% from other patients, 7.7% from the internet, 4.8% from television, 4.2% from pharmaceutical booklet, 3.6% from other sources, and 1.9% from relatives.

A total of 57.1% of patients with relapsed epithelial ovarian cancer had heard about maintenance therapy and 71.5% of these patients had heard about maintenance therapy from doctors, 7.6% from other patients, 7.4% from the internet, 4.7% from television, 2.9% from pharmaceutical booklet, 4.0% from other sources, and 1.8% from relatives.

Expectations of patients regarding maintenance therapy
While 44.6% of patients participating in this survey had heard about maintenance therapy, 29.3% were receiving maintenance therapy. Our results showed that 72.5% of patients would choose maintenance therapy to ‘increase the chance of cure’, 46.6% to ‘improve quality of life’ 36.5% to ‘delay tumor progression’, 33.2% prefer ‘no deterioration in quality of life’, 32.5% to ‘shrink the tumor’, and 25% to ‘decrease CA125’ (Table 2). Most patients (38.4%) would accept maintenance therapy until tumor progression, 22.9% for 6–12 months, 7.7% for 12–18 months, 7.5% for 18–24 months, 2.9% for 24–36 months, and 7.1% for 48–60 months (Table 3). Most patients would take maintenance therapy for up to 24 months if it led to a delay in tumor progression by more than 6 months (53.3%); 9.9% of patients did not want such a long therapy.

The preferred schedule of administration of maintenance therapy was daily oral (31.7%), followed by every 3 weeks by infusion (31.7%) (Table 4). The adverse effects of most concern in patients with ovarian cancer were polyneuropathy (36.7%), nausea (35.6%), hair loss (34.0%), vomiting (33.7%), fatigue (25.2%), increased risk of infection (23.8%), edema (18.9%), high blood pressure (18.8%), increased risk of bleeding (15.6%), constipation (15.1%), diarrhea (13.1%), stomach ache (13.0%), skin rash or skin infections (9.9%), anemia (9.2%), and wound healing disturbance (5.7%) (Table 5).

Maintenance versus no maintenance
There was no significant difference in age (p=0.56), surgical therapy (p=0.07), or living situation (p=0.42) in patients choosing or not choosing maintenance therapy. Patients with recurrent disease (38%) received maintenance therapy significantly more
often compared with patients receiving frontline therapy (38.3% vs 28.7%, p=0.001). On the other hand, patients receiving maintenance therapy were diagnosed with FIGO stage III or IV significantly more often than stage I–II at the initial diagnosis (60.9% vs 6.6%, p<0.001). Patients receiving maintenance therapy were willing to accept a longer maximal duration of treatment (30.1% vs 14.6%, p=0.001) and expected a higher chance of cure (80.2% vs 69.1%, p<0.001) compared with patients not receiving treatment.

**Patients aged ≤70 versus >70 years of age**

Patients older than 70 years were not aware of their initial tumor stage significantly more often than younger patients (49.7% vs 32.7%, p=0.001) and underwent surgery significantly less often (92.4% vs 97%, p<0.001). There were no differences in administration of chemotherapy (96.4% vs 93.9%, p=0.075). Older patients stated they were living alone significantly more often (32% vs 15.1%, p<0.001) and were taking significantly more tablets for comorbidities than younger patients (81.8% vs 57.1%, p<0.001). There was no significant difference in obtaining maintenance therapy (33.6% vs 33.4%, p=1.0) or the acceptable maximum duration (26.3% vs 26.4%, p=0.601) between older and younger patients. More patients younger than 70 years had heard about maintenance therapy (49.6% vs 42.6%, p=0.023). There was a significant difference regarding the most important goals of maintenance therapy between the two age groups. Younger patients highlighted the importance of an increased chance of cure (59% vs 52.3%, p=0.036), while older patients preferred no deterioration in quality of life (17% vs 10.4%, p=0.002). There was no significant difference in preference for administration of maintenance therapy between the two groups (32.5% vs 29.7%, p=0.079). Regarding adverse effects, older patients were more concerned about high blood pressure (24.8% vs 17.5%, p=0.003), while younger patients were more concerned about the increased risk of bleeding (16.8% vs 11%, p=0.013), vomiting (35.2% vs 26.6%, p=0.003), as well as wound healing disturbances (6.3% vs 2.5%, p=0.007).

**Primary versus recurrent disease**

Significantly more patients with primary ovarian cancer said they felt ‘very well’ when asked about their current state of health (27.9% vs 10.9%, p<0.001), while significantly more patients with recurrent disease were taking tablets for comorbidities regularly (66% vs 57.4%, p<0.001). Patients with relapsed disease were more aware of the concept of maintenance therapy than patients with primary epithelial ovarian cancer (57.1% vs 40.5%, p<0.001). Regarding the most important goal of maintenance therapy, patients with recurrent disease were more often expecting ‘shrinkage of the tumor’ (11.2% vs 7.4%, p=0.005), ‘decrease in CA125’ (7.5% vs 2.5%, p<0.001), and a ‘delay in tumor progression’ (17.7% vs 6.2%, p<0.001). Conversely, patients with primary epithelial ovarian cancer more often expected an increased ‘chance of cure’ (61.8% vs 51.6%, p=0.006). Significantly more patients with recurrent disease were willing to take maintenance therapy until tumor progression (52.6% vs 40.4%, p<0.001). There was no significant difference in preference for administration of maintenance therapy (p=0.22), while patients with recurrent disease were more often worried about constipation (p=0.04) and edema (p=0.005) compared with patients in remission.

**Comedication versus no oral medications**

Patients not taking oral medications regularly described their health status more often as ‘very well’ (27.5% vs 13.2%, p<0.001) and were willing to accept maximum duration of maintenance therapy ‘just for 6–12 month’ compared with patients with regular intake of oral medications (31.3% vs 22.9%, p=0.001). Participants with regular intake of oral medications more often preferred oral administration of maintenance therapy (45.2% vs 38.9%), as well as a daily (oral) schedule (34.1% vs 26.9%).

**DISCUSSION**

Maintenance therapy has a crucial role in the treatment of primary and relapsed ovarian cancer. Several studies are ongoing to evaluate other maintenance therapies, monotherapy, or in combination, such as immune checkpoint inhibitors, and inhibitors of vascular endothelial growth factor signaling. However, trials show different adverse effects, administration forms, schedules, and comparators of available drugs for maintenance therapy. At the fifth Ovarian Cancer Consensus Conference of the Gynecologic Cancer InterGroup, Tokyo, Japan, November 2015, where representatives of 29 cooperative research groups studying gynecologic cancers gathered to establish international consensus on issues critical to the conduct of randomized trials, one of the recommended trial endpoints, apart from overall survival and progression free survival, was predefined patient reported outcomes and patient preferences. This underlines the importance of our international survey. Within this survey, and for the first time in Europe, we explored the expectations of patients with ovarian, fallopian tube, and peritoneal cancer in various stages of treatment regarding maintenance therapy.

One of the positive signals of our survey was that most patients place great value on their health status during maintenance therapy. Furthermore, patients with ovarian cancer were also highly motivated to accept maintenance therapy with a longer duration and most preferred oral administration. Patients with existing oral medication intake were more willing to add another tablet to their daily routine, while patients not taking tablets regularly preferred intravenous administration of maintenance therapy. In prior studies, comedication and comorbidity did not influence overall survival or failure of chemotherapy. These findings highlight the acceptance and compliance towards maintenance therapy by patients diagnosed with ovarian cancer, with no difference between the primary and relapse setting.

Regarding adverse effects, our study showed that patients were concerned about polyneuropathy, nausea, and hair loss. These are generally not associated with maintenance therapy, but rather with the primary treatment. This may offer an opportunity to improve communication between patients and physicians and to optimize management in general. Younger patients in our study had higher expectations of full recovery. Concordant with the results of our European Expression III survey, including 1830 patients with primary and relapsed ovarian cancer, a significant number of patients expected complete response from maintenance therapy, even patients with recurrent disease. These results show that there is still a gap between the efficacy of maintenance therapy and patients’ expectations.
There is an urgent need for more information on adverse effects and treatment goals of maintenance therapy to avoid misunderstandings and to increase patient compliance. In addition to the parameters of maintenance therapy investigated, such as efficacy and tolerability, further trials should prospectively determine the impact of patient expectations and preferences on toxicities and patient compliance. The information from our study should be discussed systematically with patients to increase compliance and satisfaction towards maintenance therapy in ovarian cancer. A recent study from Urkmez et al underlines the importance of patient perception, expectations, and experiences, and the importance of being involved in the decision making process of their treatments.29 Patient preference and expectations should also be followed in clinical trials with targeted therapies that focus on maintenance to understand their impact on patient quality of life and compliance.

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REFERENCES
1 Siegel RL, Miller KD, Jemal A. Cancer statistics, 2017. CA Cancer J Clin 2017;67:7–30.
2 Jayson GC, Kohn EC, Kitchener HC, et al. Ovarian cancer. Lancet 2014:384:1376–88.
3 Karam A, Ledermann JA, Kim J-W, et al. Fifth Ovarian Cancer Consensus Conference of the Gynecologic Cancer InterGroup: first-line interventions. Ann Oncol 2017;28:711–7.
4 Ruan G, Ye L, Liu G, et al. The role of bevazumab in targeted vascular endothelial growth factor therapy for epithelial ovarian cancer: an updated systematic review and meta-analysis. Onco Targets Ther 2018;11:521–8.
5 Oza AM, Cook AD, Pfisterer J, et al. Standard chemotherapy with or without bevacizumab for women with newly diagnosed ovarian cancer (ICON7): overall survival results of a phase 3 randomised trial. Lancet Oncol 2015;16:928–36.
6 Kanjapanan Y, Lheureux S, Oza AM. Niraparib for the treatment of ovarian cancer. Expert Opin Pharmacother 2017;18:631–40.
7 Ledermann J, Hartmann Goutley C, et al. Olaparib maintenance therapy in patients with platinum-sensitive relapsed serous ovarian cancer: a preplanned retrospective analysis of outcomes by BRCA status in a randomised phase 2 trial. Lancet Oncol 2014;15:852–61.
8 Swisher EM, Lin KK, Oza AM, et al. Rucaparib in relapsed, platinum-sensitive high-grade ovarian carcinoma (ARIEL2 Part 1): an international, multicentre, open-label, phase 2 trial. Lancet Oncol 2017;18:75–87.
9 PEBCC’s Ovarian Cancer Guidelines Group. A systematic review of patient values, preferences and expectations for the treatment of recurrent ovarian cancer. Gynecol Oncol 2017;146:392–8.
10 Wilson MK, Friedlander ML, Joly F, et al. A systematic review of health-related quality of life reporting in ovarian cancer phase III clinical trials: room to improve. Oncologist 2018;23:203–13.
11 Oskay-Özcelik G, Alavi S, Richter R, et al. Expression III: patients’ expectations and preferences regarding physician–patient relationship and clinical management—results of the international NOGGO/ENGOT-o4-GCIG study in 1830 ovarian cancer patients from European countries. Annals of Oncology 2018;29:910–6.
12 Oskay-Özcelik G, Lehmann W, Könsgen D, et al. Breast cancer patients’ expectations in respect of the physician-patient relationship and treatment management results of a survey of 617 patients. Ann Oncol 2007;18:479–84.
13 Hamanishi J, Manda M, Konishi I. Immune checkpoint inhibition in ovarian cancer. Int J Immunol 2016;28:339–48.
14 Orbegoso C, Marquina G, George A, et al. The role of cediranib in ovarian cancer. Expert Opin Pharmacother 2017;18:1637–48.
15 Wang H, Xu T, Zheng L, et al. Angiogenesis inhibitors for the treatment of ovarian cancer: an updated systematic review and meta-analysis of randomized controlled trials. Int J Gynecol Cancer 2018:28:903–14.
16 Lee J-M, Gulley JL. Checkpoint and PARP inhibitors, for whom and when. Oncotarget 2017;8:95036–7.
17 Ventriglia J, Paciolla I, Cecere SC, et al. Trabectedin in ovarian cancer: is it now a standard of care? Clin Oncol 2018;30:498–503.
18 Vergote IB, Chekerov R, Amant F, et al. Randomized, phase II, placebo-controlled, double-blind study with and without enzastaurin in combination with paclitaxel and carboplatin as first-line treatment followed by maintenance treatment in advanced ovarian cancer. J Clin Oncol 2013;31:3127–32.

Rohr I, et al. Int J Gynecol Cancer 2020:30:509–514. doi:10.1136/ijgc-2019-000892
19 Mirza MR, Monk BJ, Herrstedt J, et al. Niraparib maintenance therapy in platinum-sensitive, recurrent ovarian cancer. *N Engl J Med* 2016;375:2154–64.

20 Herzog TJ, Scambia G, Kim B-G, et al. A randomized phase II trial of maintenance therapy with sorafenib in front-line ovarian carcinoma. *Gynecol Oncol* 2013;130:25–30.

21 Woopen H, Richter R, Ismaeel F, et al. The influence of polypharmacy on grade III/IV toxicity, prior discontinuation of chemotherapy and overall survival in ovarian cancer. *Gynecol Oncol* 2016;140:554–8.

22 Markman M. Maintenance chemotherapy in the management of epithelial ovarian cancer. *Cancer Metastasis Rev* 2015;34:11–17.

23 Urkmez E, Andac-Jones E, Cibula D, et al. Perceptions, expectations, and experiences of gynecological cancer patients: a pan-European ESGO-ENGAGe survey. *Int J Gynecol Cancer* 2019;29:1425–30.