# Poster 5531: An international, multicentre, real-world analysis of epithelial ovarian cancer treatment and outcomes

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## Background

- Few multi-centre, international studies have examined the diagnosis, treatment and outcomes of epithelial ovarian cancer (EOC) from diagnosis to death using real-world evidence.
- We have established an international collaboration across 5 European sites and South Korea to perform a retrospective cohort study using real world data.

## Methods

- Patients aged ≥18, diagnosed with ovarian (C56), fallopian tube (C57) & primary peritoneal (C48) cancer between Jan 2012 and Dec 2018, were included for analysis.
- Key patient demographics, tumour characteristics, genetic testing and details of surgery and systemic therapy from diagnosis to death or last follow-up were obtained.
- The incidence/timing of second breast cancers have also been examined.
- Data from each centre was extracted, standardised to a common data model and analysed locally using a common analytic script developed in R (Figure 1).

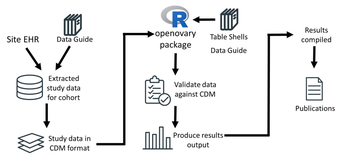



Figure 1. Project data and analysis workflow.

- The use of systemic therapy at each relapse was defined as a line of therapy (LoT)
- Time to each clinically significant progression/recurrence event (defined as time to next treatment (TTNT)) and overall survival were estimated using Kaplan Meier analysis (Figure 2).

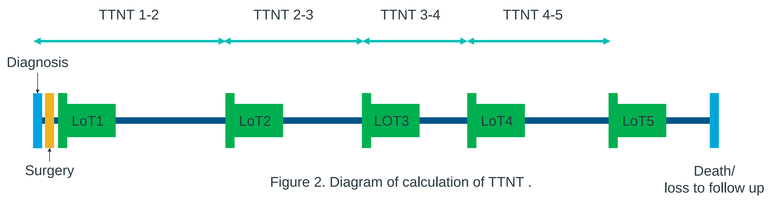
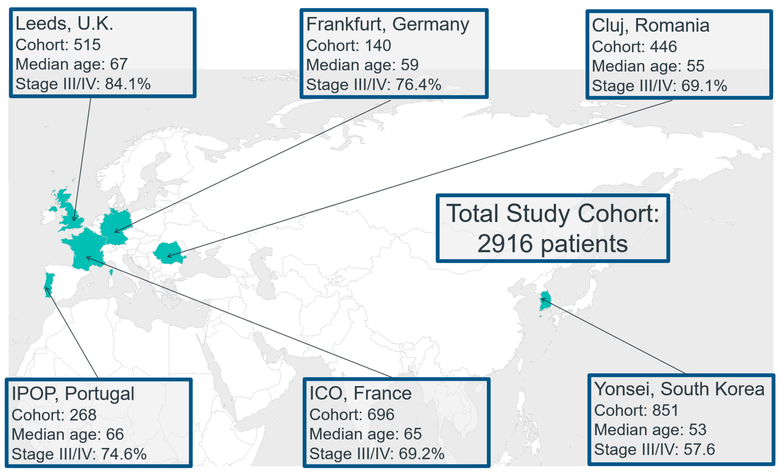



Figure 2. Diagram of calculation of TTNT .

## 6 sites across Europe & Asia




**Details of study sites**
Leeds: Leeds Cancer Centre, Leeds, U.K.
Frankfurt: University Hospital, Frankfurt am Main, Germany
Cluj: Oncology Institut "Prof Dr Ion Chiricuta", Cluj-Napoca, Romania
IPOP: Portuguese Oncology Institute of Porto, Portugal
ICO: Institute of Oncology (West) . Saint-Herblain, Angers, France
Yonsei: University College of Medicine, Severance Hospital, Seoul, South Korea

## Patient characteristics

Table 1: Patient characteristics at diagnosis

| Overall Study Cohort | | ICO | Frankfurt | Yonsei | Cluj | IPOP | Leeds |
|---|---|---|---|---|---|---|---|
| | | 696 | 140 | 851 | 446 | 268 | 515 |
| Age Group | <45 | 45 (6.5%) | 17 (12.1%) | 166 (20.4%) | 81 (18.2%) | 12 (4.5%) | 20 (3.9%) |
| | 45-59 | 174 (25.0%) | 54 (38.6%) | 440 (54.1%) | 209 (46.9%) | 75 (28.1%) | 125 (24.3%) |
| | 60-74 | 329 (47.3%) | 51 (36.4%) | 217 (26.7%) | 139 (31.2%) | 114 (42.7%) | 235 (45.6%) |
| | 75+ | 148 (21.3%) | 18 (12.9%) | 28 (3.4%) | 17 (3.8%) | 67 (25.1%) | 135 (26.2%) |
| ECOG Performance Score | 0 – Normal | 202 (29.0%) | 26 (18.6%) | 211 (24.7%) | 197 (44.2%) | 109 (40.8%) | 143 (27.8%) |
| | 1 - Light Work | 243 (34.9%) | 23 (16.4%) | 56 (6.6%) | 179 (40.1%) | 49 (18.4%) | 147 (28.5%) |
| | 2 - Ambulatory >50% | 66 (9.5%) | 4 (2.9%) | 14 (1.7%) | 16 (3.6%) | 29 (10.9%) | 69 (13.4%) |
| | 3 - Ambulatory <50% | 13 (1.9%) | 3 (2.1%) | 1 (0.1%) | 4 (0.9%) | 13 (4.9%) | 45, (8.7%) |
| | 4 - Continuous Care | 5 (0.7%) | | - | | 14 (5.2%) | <6 |
| | Not available | 167 (24.0%) | 84 (60.0%) | 569 (70.0%) | 50 (11.2%) | 54 (20.2%) | 108 (21.0%) |

## Key findings

- Data in the network describes over 2900 patients with EOC, their treatment and outcomes.
- Results demonstrate variation in patient demographics between sites.
- Substantial differences in both treatments and outcomes were also seen. Variation in second-line therapy was most pronounced.
- The proportion of patients undergoing surgery varied with stage; patients presenting with early stage disease were most likely to undergo debulking surgery.
- Breast cancer diagnoses were seen in 3-17% of patients, and most of these were diagnosed before EOC.

## Tumour Characteristics

Table 2: Characteristics of patients' tumours

| | | ICO | Frankfurt | Yonsei | Cluj | IPOP | Leeds |
|---|---|---|---|---|---|---|---|
| | Cohort size | 696 | 140 | 851 | 446 | 268 | 515 |
| Primary tumour site | Ovary (C56) | 682 (98.0%) | 133 (95.0%) | 790 (97.2%) | 423 (94.8%) | 227 (85.0%) | 307 (59.6%) |
| | Fallopian tube (C57) | 4 (0.6%) | 6,(4.3%) | 23 (2.8%) | 22 (4.9%) | 40 (15.0%) | 38 (7.4%) |
| | Primary peritoneal of Müllerian origin (C48) | 10 (1.4%) | 1 (0.7%) | 38 (4.7%) | 1 (0.2%) | 1 (0.4%) | 170 (33.0%) |
| FIGO stage at diagnosis | I | 73 (12.5%) | 21 (15.0%) | 232 (27.3%) | 101 (22.7%) | 39 (14.6%) | 56 (10.9%) |
| | II | 27 (4.6%) | 8 (5.7%) | 68 (8.0%) | 37 (8.3%) | 18 (6.7%) | 25 (4.9%) |
| | III | 323 (55.2%) | 72 (51.4%) | 279 (32.8%) | 259 (58.1%) | 106 (39.7%) | 293 (56.9%) |
| | IV | 162 (27.7%) | 35 (25.0%) | 211 (24.8%) | 49 (11.0%) | 94 (35.2%) | 140 (27.2%) |
| | Missing/Unknown | 111 (15.9%) | 4 (2.9%) | 61 (7.5%) | | 11 (4.1%) | <6 |
| Morphology | High grade serous | 472 (70.7%) | 91 (65.0%) | 460 (54.1%) | 288 (64.6%) | 103 (38.6%) | 350 (68.0%) |
| | Low grade serous | 18 (2.7%) | 7 (5.0%) | 22 (2.6%) | 43 (9.6%) | 13 (4.9%) | 25 (4.9%) |
| | Serous, unknown grade | 3 (0.4%) | 9 (6.4%) | 25 (2.9%) | 6 (1.4%) | 31 (11.6%) | 20 (3.9%) |
| | Endometrioid | 22 (3.3%) | 8 (5.7%) | 66 (7.8%) | 32 (7.2%) | 15 (5.6%) | 43 (8.4%) |
| | Small Cell | 1 (0.1%) | - | 17 (2.0%) | 3 (0.7%) | 1 (0.4%) | <6 |
| | Mixed | 12 (1.8%) | - | 29 (3.4%) | 23 (5.2%) | 10 (3.7%) | 8 (1.6%) |
| | Carcinosarcoma | 9 (1.3%) | - | 15 (1.8%) | 1 (0.2%) | 11 (4.1%) | 36 (7.0%) |
| | Mucinous | 14 (2.1%) | 7 (5.0%) | 70 (8.2%) | 28 (6.3%) | 13 (4.9%) | 15 (2.9%) |
| | Clear Cell | 28 (4.2%) | 4 (2.9%) | 100 (11.8%) | 10 (2.2%) | 20 (7.5%) | 9 (1.8%) |
| | Other, Undifferentiated & Unknown | 117 (16.8%) | 14 (10.0%) | 47 (5.5%) | 12 (2.7%) | 51 (19.0%) | <6 |
| Grade | Well differentiated | 42 (6.03) | 13 (9.3%) | 82 (12.37) | 77 (17.3%) | 27 (10.1%) | 34 (6.6%) |
| | Moderately differentiated | 38 (5.5%) | 24 (17.1%) | 153 (23.08) | 54 (12.1%) | 12 (4.5%) | 13 (2.5%) |
| | Poorly differentiated | 426 (61.2%) | 87 (62.1%) | 428 (64.56) | 282 (63.2%) | 123 (45.9%) | 414 (80.4%) |
| | Missing/Invalid | 195 (28.0%) | 16 (11.4%) | - | 33 (7.4) | 106 (39.6%) | 54 (10.5%) |

## Breast cancers

Table 3: Breast cancer diagnoses

| Overall Study Cohort | ICO | Frankfurt | Yonsei | Cluj | IPOP | Leeds |
|---|---|---|---|---|---|---|
| | 696 | 140 | 851 | 446 | 268 | 515 |
| Breast cancer never diagnosed | 630 (90.5%) | <116 (82.9%) [1] | 823 (96.7%) | 427 (95.7%) | 478 (92.8%) | 250 (93.3%) |
| Breast cancer diagnosed | 66 (9.5%) | >24 (17.1%) [1] | 28 (3.3%) | 19 (4.3%) | 37 (7.2%) | 18 (6.7%) |
| Before EOC Diagnosis | 55 (83.3%) | 21 (87.5%) | 22 (78.6%) | 17 (89.5%) | 34 (91.9%) | 16 (88.9%) |
| After EOC Diagnosis | 11 (16.7%) | >3 (12.5%)[1] | 6 (21.4%) | 2 (10.5%) | 3 (8.1%) | <6 |

[1]Complete data not available.

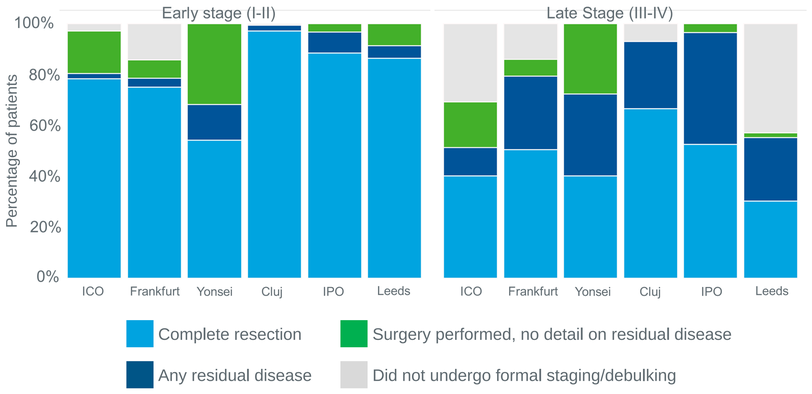
## Genetic testing

Table 4: BRCA1/2 tests & pathogenic mutations

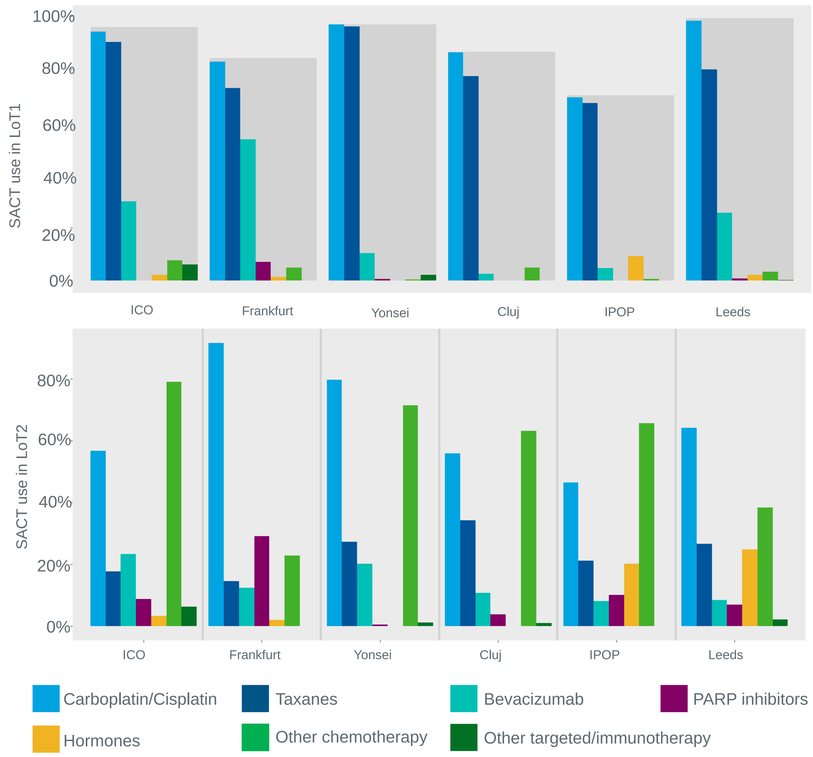
| Overall Study Cohort | | ICO | Frankfurt[1] | Yonsei | Cluj | IPOP | Leeds |
|---|---|---|---|---|---|---|---|
| | | 696 | 140 | 851 | 446 | 268 | 515 |
| Germline BRCA1 | Patients with results available | 356 | - | 444 | 72 | 131 | 257 |
| | Pathogenic Variant | 52 (14.6%) | - | 69 (15.5%) | 24 (33.3%) | 7 (5.3%) | 24 (9.3%) |
| Germline BRCA2 | Patients with results available | 344 | - | 447 | 72 | 131 | 257 |
| | Pathogenic Variant | 17 (4.9%) | - | 52 (11.6%) | 4 (5.6%) | 7 (5.3%) | 19 (7.4%) |
| Somatic BRCA1 | Patients with results available | 48 | - | 175 | 8 | 131 | - |
| | Pathogenic Variant | 4 (8.3%) | - | 12 (6.9%) | - | 3 (2.3%) | 1 (0.4%) |
| Somatic BRCA2 | Patients with results available | 46 | - | 175 | 8 | 131 | - |
| | Pathogenic Variant | 2 (4.4%) | - | 8 (4.6%) | - | 3 (2.3%) | 2 (0.8%) |

[1]Data not available.

## Debulking surgery outcome




## SACT agents at LoT1 & 2




## OS and TTNT

Table 5: Overall Survival and Time To Next Treatment

| Overall Study Cohort | | ICO | Frankfurt | Yonsei | Cluj | IPOP | Leeds |
|---|---|---|---|---|---|---|---|
| | | 696 | 140 | 851 | 446 | 284 | 515 |
| Patients at risk[1] | 1 year | 632 (90.8%) | 125 (89.3%) | 850 (99.9%) | 430 (96.4%) | 189 (66.5%) | 429 (83.3%) |
| | 2 years | 454 (65.2%) | 106 (75.6%) | 654 (76.9%) | 322 (72.2%) | 131 (46.1%) | 284 (55.1%) |
| | 5 years | 80 (11.5%) | 25 (17.7%) | 204 (24%) | 95 (21.3%) | 34 (12%) | 79 (15.3%) |
| Overall survival (months) | Median | 60.4 | 59.8 | * | 65.48 | 25.46 | 30.06 |
| | 95% CI | 53.1 - * | 50.03- * | * | 56.54 - 79.34 | 19.55 - 35.42 | 27.6 - 35.32 |
| Overall survival (months) HGS only | Median | 58.4 | 51.5 | * | 63 | 50.8 | 29.2 |
| | 95% CI | 53.1 – 75.3 | 45.9 - * | 74.3 - * | 26.7 – 33.2 | 34.0 - * | 26.7 – 33.2 |
| Receive 2nd line SACT | | 395 (56.6%) | 59 (42.1%) | 336 (39.5%) | 207 (46.4%) | 101 (35.6%) | 281 (54.6%) |
| Receive 3rd line SACT | | 251 (36.1%) | 28 (20%) | 227 (26.7%) | 100 (22.4%) | 51,(18%) | 168,(32.6%) |
| TTNT1-2 (months) | Median | 22.1 | 32.9 | 65.9 | 34 | 14.3 | 16.5 |
| | 95% CI | 20.2 – 23.7 | 27.3 – 42.9 | 50.8 - * | 28.3 – 44.6 | 13.3 – 17.2 | 15.1 – 18.0 |
| TTNT1-2 (months) HGS only | Median | 20.8 | 29.9 | 30.8 | 27 | 17.7 | 15.4 |
| | 95% CI | 19.5 - 23.2 | 23.6 – 36.0 | 25.2 - 37.7 | 23.2 - 30.7 | 14.9 – 22.4 | 14.0 – 16.7 |

[1]Patients alive & not lost to follow up.

## Conclusions

- This study demonstrates the value of real world evidence to demonstrate true pathways of care seen in different centres.
- The development of a common data model and the use of a common analytic script allows for detailed exploration of the factors influencing differences in patient management and treatment outcomes
- Contact g.hall@leeds.ac.uk