Background Tumor Treating Fields (TTFields) are a non-invasive, anti-tumorigenic cancer therapy. The Phase 2 INNOVATE study demonstrated safety of TTFields/weekly paclitaxel in 31 PROC (platinum-resistant ovarian cancer) patients (Vergote Gyn Onc 2018); efficacy: median PFS 8.9 months, 25% partial response, 71% clinical benefit and 61% 1-year survival rate. This phase 3 ENGOT-ov50/GOG-329/INNOVATE-3 study [NCT03940196] investigates TTFields plus weekly paclitaxel in PROC patients.

Study Design Patients (N=540) will have PROC (RECIST V1.1) within 6 months of last platinum therapy with maximum of 2–5 prior lines of systemic therapy, ECOG 0–1 and no peripheral neuropathy >grade 1. Patients with primary refractory disease will be excluded. Patients will be randomized 1:1 to weekly paclitaxel alone or weekly paclitaxel (starting of dose 80 mg/m2 weekly for 8 weeks, and then on Days 1, 8, and 15 for subsequent 28-day cycle) plus TTFields (200 kHz for 18 hours/day and continued if no progression in the abdominal or pelvic regions (‘in-field region’) per RECIST V1.1. Clinical follow-up will be performed q4w, with radiological follow-up (CT or MRI scans of the abdomen and chest) q8w. The primary endpoint is overall survival. Secondary endpoints: PFS, objective response rate, AEs, and quality of life (EORTC QLQ-C30 with QLQ-OV28). Sample size (n=540) will detect an increase in median OS from 12 to 16 months (HR 0.75). Data Monitoring Committee (DMC) meeting (March 2020) concluded that data to-date showed no safety issues and recommended trial continuation.

Conclusion Two of the four studied cancers showed a significant reduction in mortality rates. There was a sustained reduction, although modest, in breast and ovarian cancer mortality of 0.77% (CI -1.0 to -0.6) and 0.63% (CI -1.1 to -0.2) per year, respectively. The most significant change was observed in cervical cancer with an annual reduction of 4% (CI -4.3 to -3.7). All corpus uteri cancers considered together, had a non-significant tendency towards reduction. In a sub-analysis of mortality for cervical cancer in women under 40 years, we observed a break in the negative tendency after 2011, revealing a rise of 3.1% (CI -0.6 to 11.2) per year.