Paper Summary

<!--META_START-->

Title: Actionable mutations in early-stage ovarian cancer according to the ESMO Scale for Clinical Action

Authors: F. Camarda, L. Mastrantoni, C. Parrillo, A. Minucci, F. Persiani, D. Giannarelli, T. Pasciuto, F. G

DOI: https://doi.org/10.1016/j.esmoop.2024.104090

Year: 2025

Publication Type: Journal

Discipline/Domain: Oncology / Precision Medicine

Subdomain/Topic: Early-stage epithelial ovarian cancer, genomic profiling, actionable mutations, ESCAT

Eligibility: Eligible

Overall Relevance Score: 85

Operationalization Score: 80

Contains Definition of Actionability: Yes (via ESCAT framework)

Contains Systematic Features/Dimensions: Yes

Contains Explainability: No

Contains Interpretability: Partial

Contains Framework/Model: Yes (ESCAT classification tiers I–III)

Operationalization Present: Yes

Primary Methodology: Quantitative (prospective cohort, genomic profiling)

Study Context: Clinical oncology, early-stage epithelial ovarian cancer, targeted therapy potential

Geographic/Institutional Context: Fondazione Policlinico Universitario Agostino Gemelli IRCCS, Rome, Ita

Target Users/Stakeholders: Oncologists, clinical researchers, precision medicine practitioners, policy-mal

Primary Contribution Type: Empirical study with framework application (ESCAT)

CL: Yes

CR: Yes

FE: Yes

TI: No

EX: No

GA: Yes

Reason if Not Eligible: N/A

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Title:

Actionable mutations in early-stage ovarian cancer according to the ESMO Scale for Clinical Actionability

Authors:

F. Camarda, L. Mastrantoni, C. Parrillo, A. Minucci, F. Persiani, D. Giannarelli, T. Pasciuto, F. Giacomini,

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Year:

2025

Publication Type:

Journal

Discipline/Domain:

Oncology / Precision Medicine

Subdomain/Topic:

Early-stage epithelial ovarian cancer, genomic profiling, actionable mutations, ESCAT

Contextual Background:

The study focuses on early-stage epithelial ovarian cancer (EOC), assessing the prevalence and distribut

Geographic/Institutional Context:

Fondazione Policlinico Universitario Agostino Gemelli IRCCS, Rome, Italy

Target Users/Stakeholders:

Oncologists, molecular pathologists, clinical researchers, precision oncology practitioners, guideline deve

Primary Methodology:

Quantitative — prospective cohort study with targeted next-generation sequencing (NGS) and ESCAT cla

Primary Contribution Type:

Empirical study applying a conceptual framework (ESCAT) to clinical genomic data.

General Summary of the Paper

This prospective single-center study analyzed 180 patients with FIGO stage I–II EOC, using targeted NG

Eligibility

Eligible for inclusion: **Yes**

The paper explicitly applies the ESCAT actionability framework, providing a structured classification of mu

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How Actionability is Understood

Actionability is framed through the ESCAT scale, which ranks molecular targets based on clinical evidenc

> “Oncogenic alterations were identified using OncoKB and classified according to the ESMO Scale for C

> “The ESCAT framework… prioritizes molecular targets based on the strength of evidence supporting th

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What Makes Something Actionable

- Evidence-supported relevance as a clinical target.
- Classification in ESCAT Tier I–III (Tier I = highest clinical evidence; Tier III = emerging evidence).
- Potential to inform therapeutic decisions (drug selection, de-escalation/escalation).
- Relevance to tumor biology and prognosis.

How Actionability is Achieved / Operationalized

- **Framework/Approach Name(s):** ESCAT (ESMO Scale for Clinical Actionability of molecular Targets)
- **Methods/Levers:** Comprehensive genomic profiling via TSO500 high-throughput NGS panel; annota
- **Operational Steps / Workflow:**
  1. Patient enrollment and staging.
  2. NGS sequencing of tumor tissue.
  3. Variant annotation and filtering for oncogenicity.
  4. ESCAT tier assignment.
  5. Risk stratification integration.
- **Data & Measures:** Mutation type, frequency, co-occurrence, MSI, TMB, recurrence-free survival.
- **Implementation Context:** Applied in a clinical oncology setting for prospective patient profiling.

> “Sequencing was carried out with a mean depth of >500×… only mutations annotated as ‘Oncogenic’ o

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Dimensions and Attributes of Actionability (Authors’ Perspective)

- **CL (Clarity):** Yes — ESCAT provides clear ranking criteria.
- **CR (Contextual Relevance):** Yes — Actionability tied to EOC stage, histotype, recurrence risk.
- **FE (Feasibility):** Yes — Technically feasible in a hospital NGS program.
- **TI (Timeliness):** No explicit mention.
- **EX (Explainability):** No direct link made.
- **GA (Goal Alignment):** Yes — Actionability linked to patient outcome improvement and toxicity reduct
- **Other Dimensions:** Risk-stratified application, molecular co-alteration analysis.

Theoretical or Conceptual Foundations

- ESMO Precision Medicine Working Group ESCAT framework.
- OncoKB oncogenicity annotation system.
- Principles of tumor-agnostic targeting.

Indicators or Metrics for Actionability

- ESCAT Tier classification.
- Mutation prevalence and co-occurrence.
- MSI status and TMB values.
- Risk group-specific mutation frequency.

Barriers and Enablers to Actionability

- **Barriers:** Short follow-up; unclear prognostic role of some variants; potential resistance to targeted th
- **Enablers:** High prevalence of actionable variants; feasibility of NGS profiling; established ESCAT fra

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Relation to Existing Literature

Positions findings within ESMO/ESGO consensus guidelines for EOC, contrasts with mutation prevalence

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Summary

This study demonstrates that genomic profiling of early-stage EOC using the ESCAT framework reveals c

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Scores

- **Overall Relevance Score:** 85 — Strong use of ESCAT for defining and ranking actionability; integrate
- **Operationalization Score:** 80 — Detailed NGS and classification workflow; some gaps in timeliness a

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Supporting Quotes from the Paper

- “Oncogenic alterations were identified using OncoKB and classified according to the ESMO Scale for Cl
- “ESCAT… prioritizing them based on the strength of evidence supporting their relevance as clinical targ
- “Sequencing was carried out with a mean depth of >500×… only mutations annotated as ‘Oncogenic’ or
- “These findings highlight the potential for actionable alterations in most early-stage EOC patients and su

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Actionability References to Other Papers

- Mosele MF et al., 2024 — ESMO Precision Medicine Working Group recommendations for NGS use.
- Fieuws C et al., 2024 — Identification of actionable variants in EOC.
- Multiple ESMO-ESGO consensus guidelines on EOC pathology and molecular biology.