

AVAILABILITY OF EARLY PREVENTION AND TARGETED THERAPY FOR BRCA-ASSOCIATED PATIENTS WITH BREAST AND/OR OVARIAN CANCER

Lemeshko V.^{1,2}, Teptsova T.^{1,2}, Ratushnyak S.¹, Musina N.^{1,2}

¹ Center for Healthcare Quality Assessment and Control of the Ministry of Health of the Russian Federation

² I.M. Sechenov First Moscow State Medical University of the Ministry of Health of the Russian Federation

PCN 270

(Sechenov University)

OBJECTIVES

BRCA1/2 mutations are involved in 5% cases of breast cancer (BC) and 5–15% of ovarian cancer (OC). The aim of our research was to identify reasonability of BRCA testing at diagnosis for Russian patients and to assess the current affordability of medical services and therapy options for BRCAm carriers in Russia.

METHODS

The systematic search was carried out to identify: a) prevalence of specific BRCA1/2 mutations in Russian cancer patients; b) evidence that founder mutations are associated with a high risk of BC/OC in familiars; c) information in clinical guidelines about specific diagnostic, monitoring and treatment options provided for BRCAm carriers.

RESULTS

Overall, the frequent mutations comprise >50% of all BRCAm cases in Russian population. The most common BRCA1 mutation in Russian patients is 5382insC for both cancers. There are two frequently identifying mutations – 300T>G and 185delAG, and two for OC – 4153delA and 2080delA. The most common BRCA2 mutation is 6174delT for both cancers. There was just one comparative study with statistically significant results about correlation between mutation rs4987117 in BRCA2 and increased risk of BC for BRCA carriers (OR 2.76, p = 0.022). Other studies identified statistically significant higher frequency of mutations in BC/OC patients' familiars than in women without family history. In Russian clinical guidelines, there is a recommendation for genetic counselling and BRCA testing for patients with high grade OC and BC with clinical signs of hereditary. Recommendation of PARP-inhibitors therapy exists only for OC patients. There are no prevention services for healthy BRCAm carries.

CONCLUSIONS

These results show the high potential of BRCAm testing for further introduction of an optimized personalized therapy for BRCAm carriers, as well as the early diagnostic of high-risk groups for prevention. Thus, it is a considerable demand for further economic evaluation of the feasibility of BRCAm testing wider implementation into the Russian health care system.

Table 1. BRCA-specialized health services for BC in Russia based on three clinical guidelines

Criteria	Status in Russia	Details
Facilities for patients with diagnosed BC		
Genetic testing for BRCA1 mutations	✓	Recommended for patients with: – two or more relatives with a history of BC; – young age at diagnosis (<50 years or 40 years or 35 years)*;
Genetic testing for BRCA2 mutations	✓	– multiple primary BC; – triple-negative BC; – BC in men.
Genetic counseling	✓	Recommended in two clinical guidelines
Modification of diagnostic strategy	✗	No information in clinical guidelines
Modification of treatment strategy	✗	No information in clinical guidelines
Gene testing availability in NHI** program	✓	PCR-based methods
Facilities for BC prevention		
Genetic testing for BRCA1 mutations (without diagnosed BC)	✗	No information in clinical guidelines
Genetic testing for BRCA2 mutations (without diagnosed BC)	✗	
Genetic counseling	✗	
Preventive measures (monitoring, preventive surgery, preventive chemotherapy etc.)	✗	

* Vary in different clinical guidelines

** National health insurance

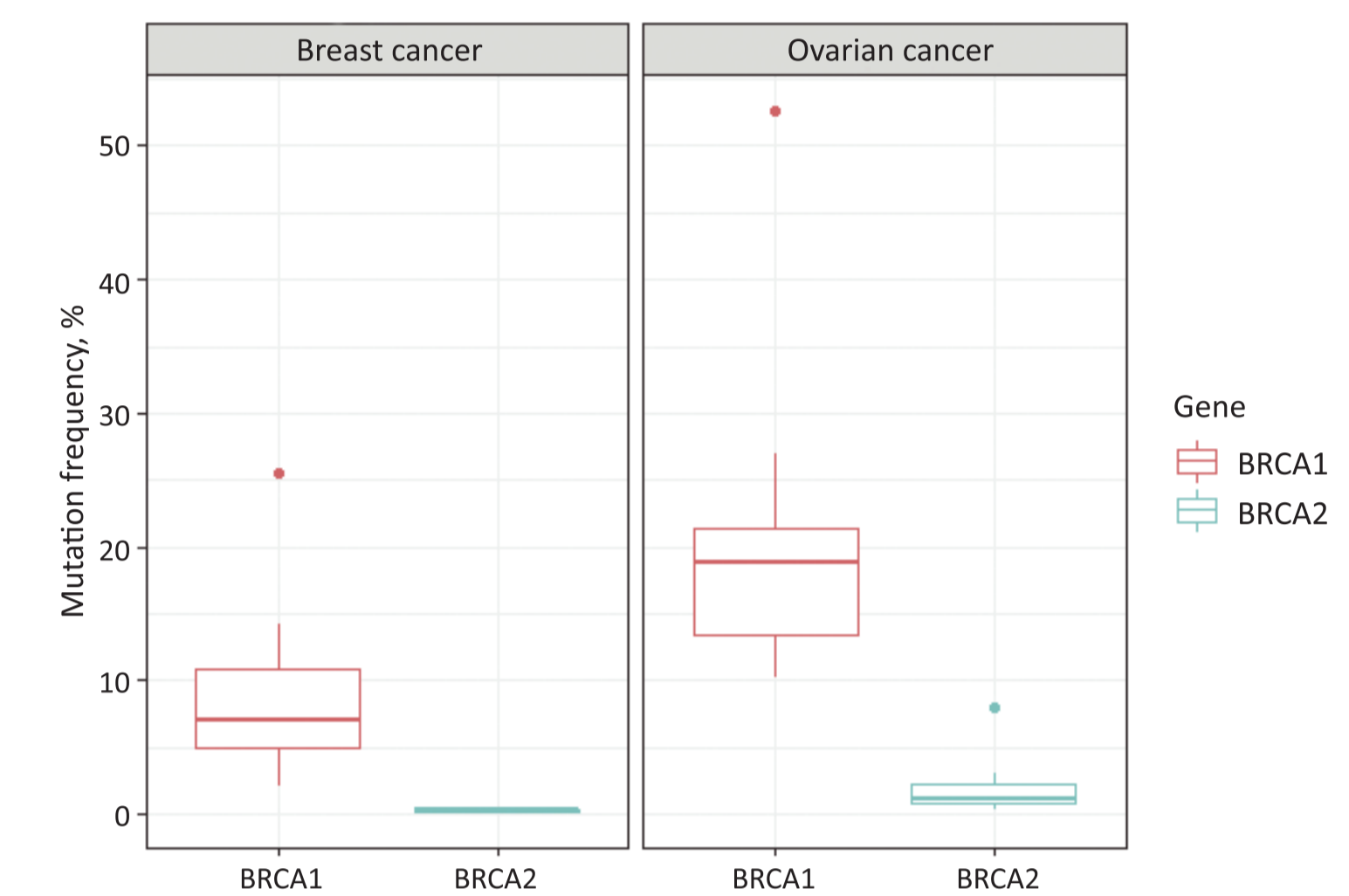


Figure 1. BRCA1 and BRCA2 mutation frequency (%) in BC and OC

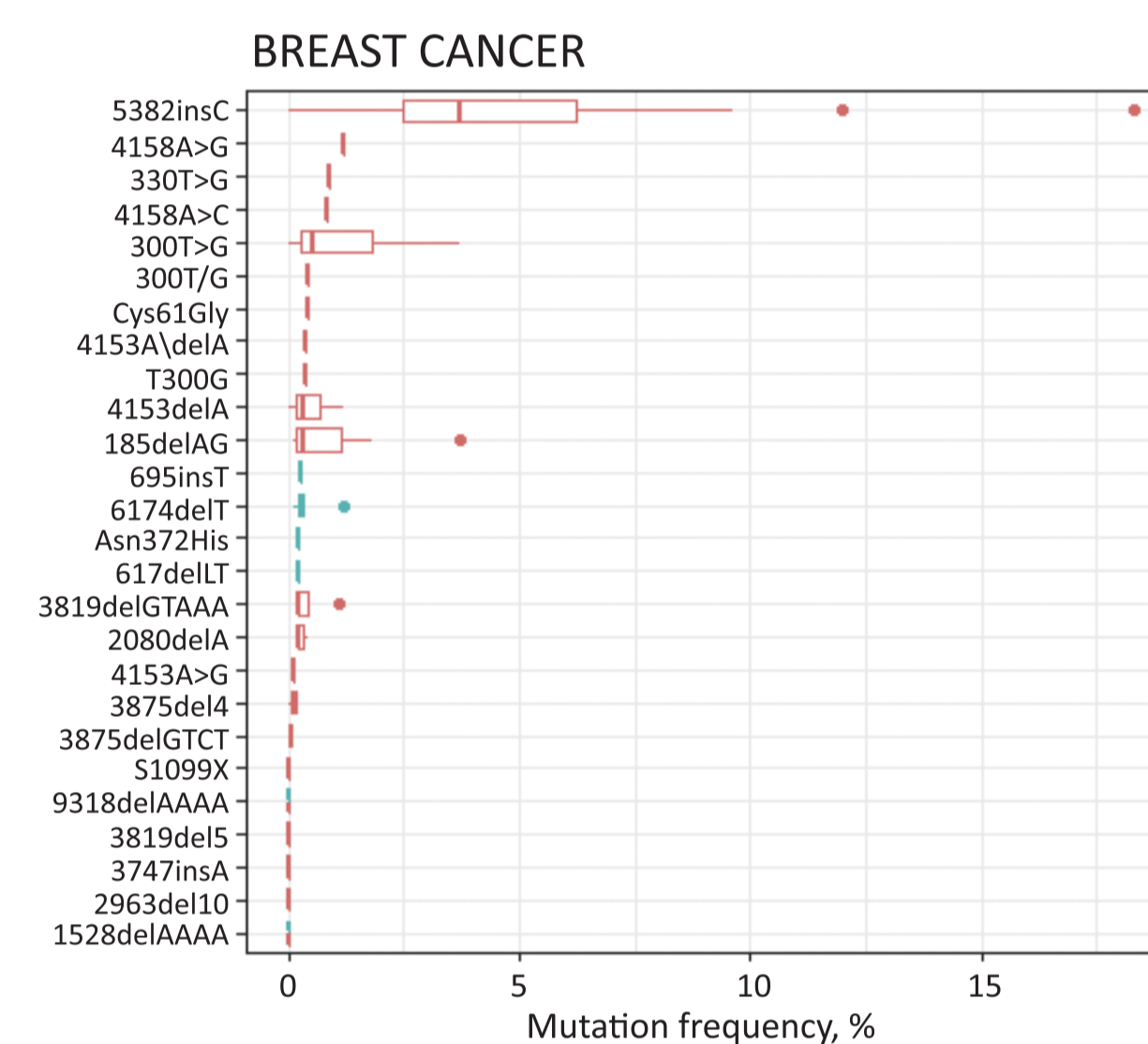


Figure 2. Mutations frequency (%) in BC

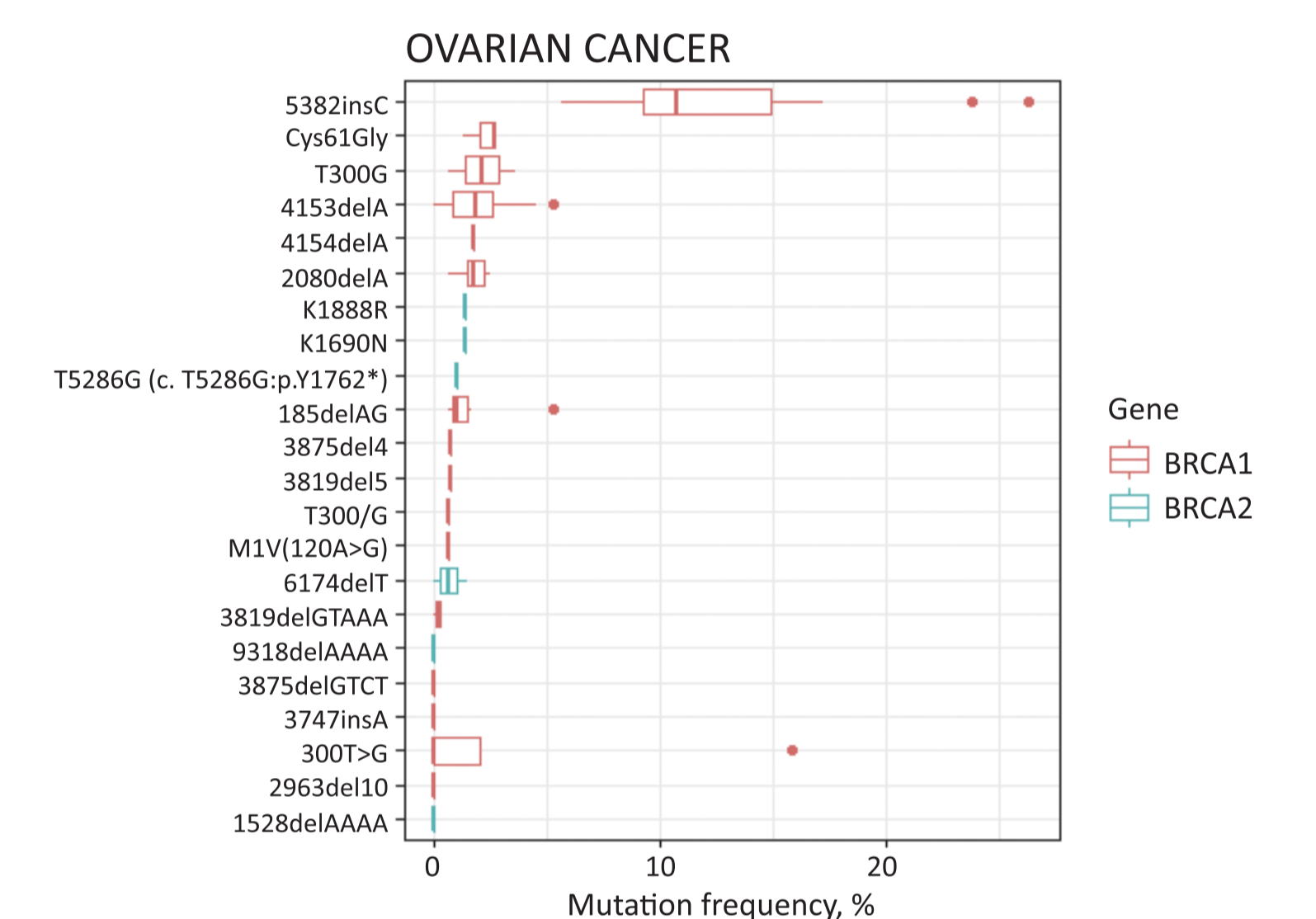


Figure 3. Mutations frequency (%) in OC

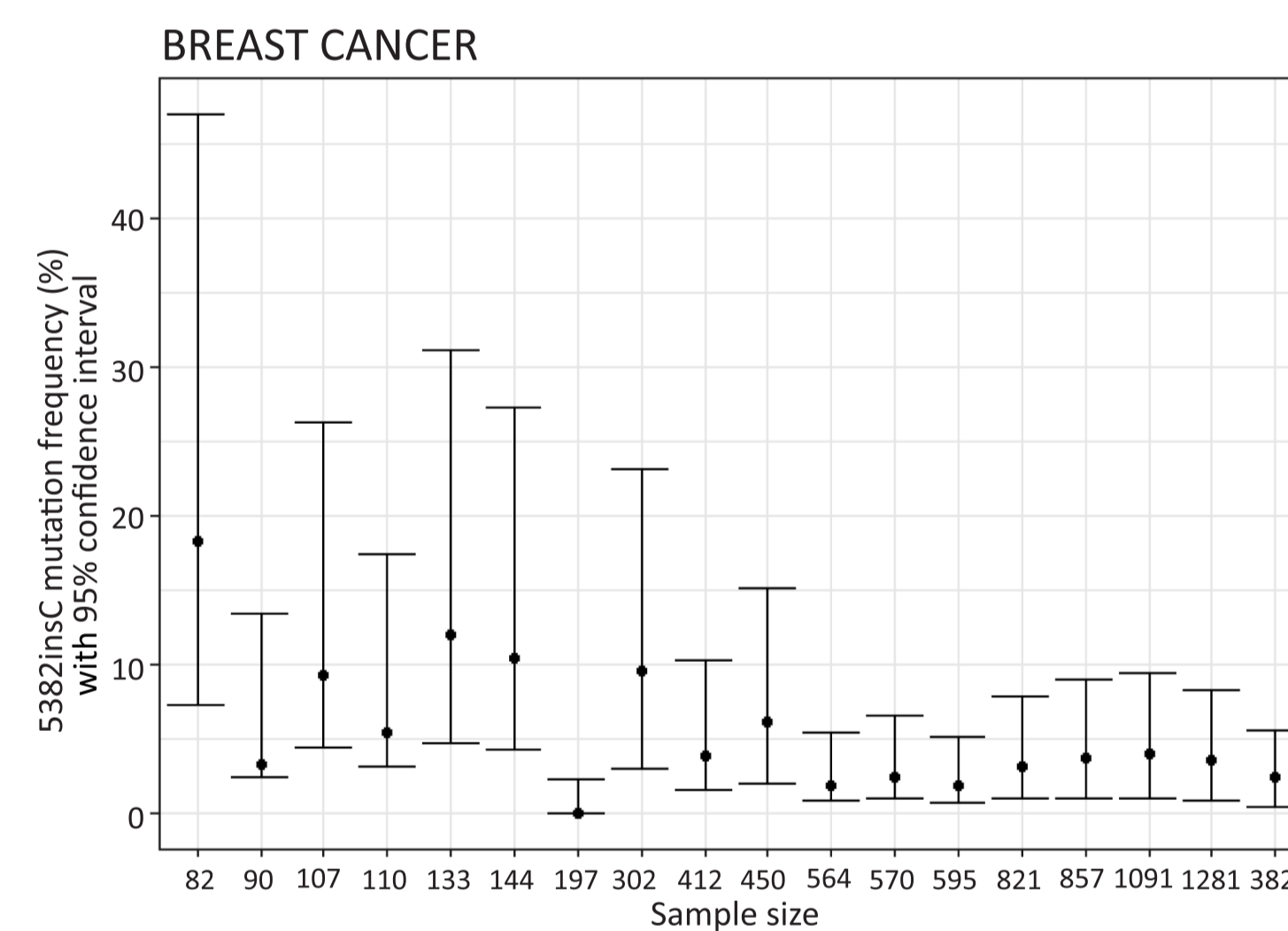


Figure 4. 5382insC mutation frequency (%) with 95% confidence interval in BC (based on the results of different studies)

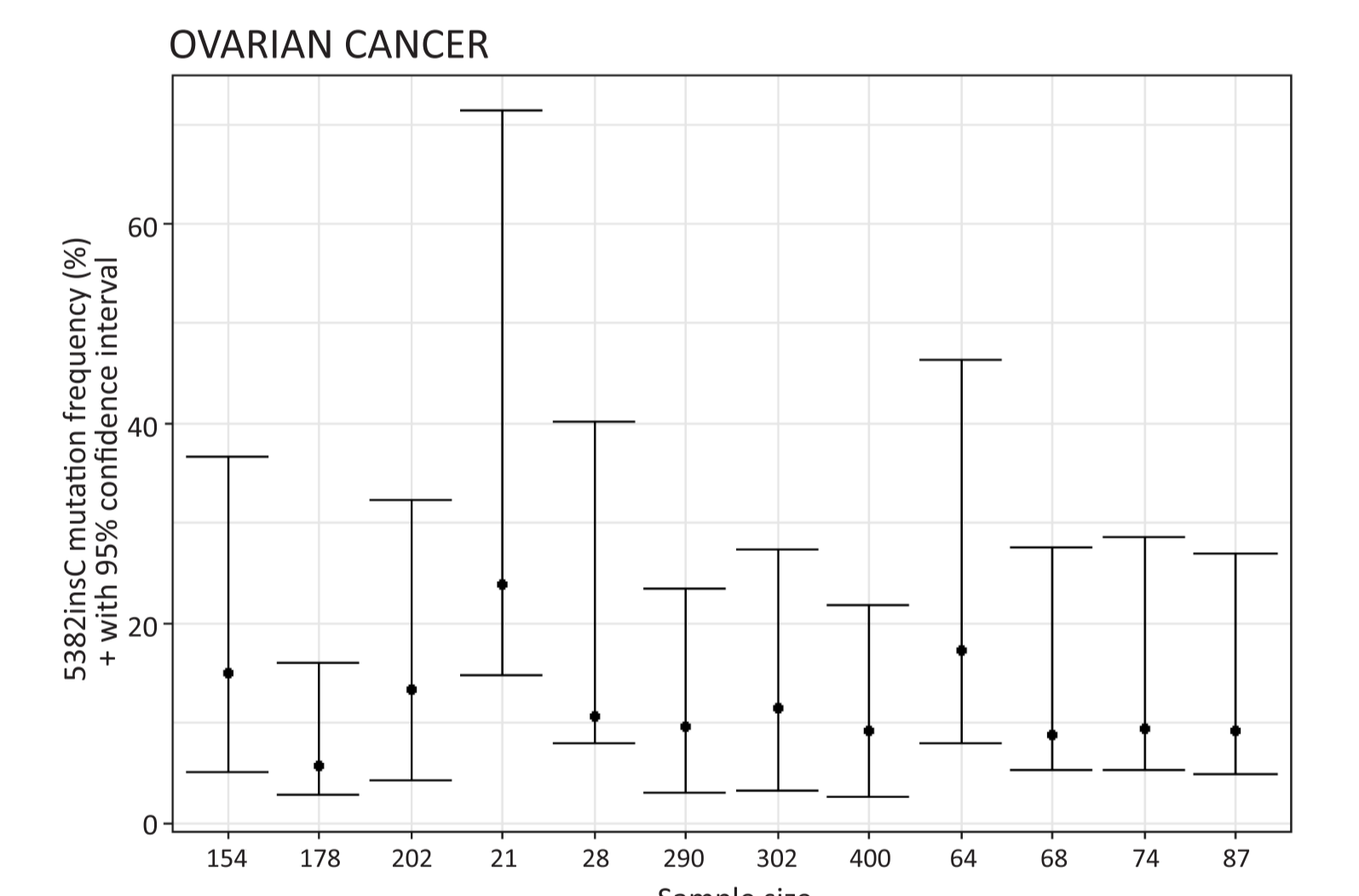


Figure 5. 5382insC mutation frequency (%) with 95% confidence interval in OC (based on the results of different studies)

Table 2. BRCA-specialized health services for OC in Russia based on two clinical guidelines

Criteria	Status in Russia	Details
Facilities for patients with diagnosed OC		
Genetic testing for BRCA1 mutations	✓	All patients with high-grade endometrial or high-grade-serous carcinoma
Genetic testing for BRCA2 mutations	✓	
Genetic counseling	✓	Recommended in two clinical guidelines
Modification of diagnostic strategy	✗	No information in clinical guidelines
Modification of treatment strategy	✓	Recommended for patients with: – high-grade serous carcinoma; – BRCA-positive status (germline or somatic mutation); – objective response after the last platinum-containing chemotherapy prescribed for platinum-sensitive relapse.
Gene testing availability in NHI* program	✓	PCR-based methods
Facilities for OC prevention		
Genetic testing for BRCA1 mutations (without diagnosed OC)	✗	No information in clinical guidelines
Genetic testing for BRCA2 mutations (without diagnosed OC)	✗	
Genetic counseling	✗	
Preventive measures (monitoring, preventive surgery, preventive chemotherapy etc.)	✗	

* National health insurance