standards to facilitate sharing and analysis of these repertoire data through the AIRR Data Commons (ADC).

Methods The iReceptor Gateway (www.ireceptor.org) implements the AIRR Data Commons as a network of federated repositories which facilitates data queries and advanced analyses. Secure data repositories, single cell immune profiling, and RNA gene expression and more detailed cell phenotype data for Systems Immunology are being added by the iReceptor Plus consortium, funded by Canadian Institutes of Health Research (CIHR) and the EU Horizon 2020 program.

Results As of August 2020, the iReceptor Gateway provides access to 2.7 billion receptor sequences, from 2779 repertoires, and 46 studies; these include 3 B-cell and 10 T-cell cancer studies. These can be queried for specific CDR3 sequences, in order to test whether particular sequences are public (occurring in multiple patients) or private (only found in a few individuals). These can also be queried for specific 'metadata', e.g. 'find all repertoires from studies of ovarian cancer.' The Gateway aggregates these repertoire data for further analysis by sophisticated AIRR-seq algorithms on HPC resources.

Conclusions Analysis of aggregated AIRR-seq data through the iReceptor Gateway has great potential to revolutionize many aspects of cancer immunotherapy. The FDA has already approved the use of AIRR-seq data for monitoring clonal expansion as a diagnostic tool in MRD (minimal residual disease). Sequences from tumor specific clones provide targets for monoclonal antibodies in anti-checkpoint therapy and CAR-T cell approaches. Several studies have shown that AIRR-seq data provide biomarkers that partition patients into responders/non-responders and predict those who may exhibit adverse reactions to novel cancer immunotherapies. This potential will be realized as more researchers adopt the AIRR Community standards for sharing and analyzing AIRR-seq data, resulting in more efficient biomedical research and improved patient care.

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Education and treatment management

487 REASONS FOR NOT TESTING FOR BIOMARKERS IN NON-SMALL CELL LUNG CANCER: A REGIONAL COMPARISON OF PATIENTS IN THE US AND EUROPE

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Background The growth in the number of targeted therapies available for the treatment of solid tumors has placed biomarker testing at the heart of clinical practice, especially for non-small lung cancer (NSCLC). Guidelines such as those by the American Society of Clinical Oncology and the European Society for Medical Oncology, recommend that all advanced NSCLC patients be tested for EGFR, ALK, ROS-1 and PD-L1 and that further markers (such as BRAF and KRAS) be included in larger panels. Despite these guidelines, oncologists do not always test NSCLC patients for these biomarkers. This study explores the reasons for not testing and compares these

across the US, France, Germany, UK, Italy and Spain (collectively EU5) by examining real-world usage data.

Methods Between September and November 2019, a panel of oncologists (n=65 in US and n=235 in EU5) were asked to report on their practices relating to biomarker testing for 1,110 NSCLC patients through the submission of online, de-identified charts detailing testing for EGFR, ALK, ROS-1, PD-L1, BRAF, KRAS/NRAS, MET, RET, dMMR/MSI, TMB and NTRK. We collected data on 11,116 instances where biomarkers were skipped and recorded physicians' reasons for not testing (selected from a pre-coded list).

Results Of the reasons provided for not testing in the US (n=2,114) and EU5 (n= 9,002), waiting for progression was selected the most (27% and 25%, respectively). Lack of data regarding clinical utility (18% and 16%) and patients not meeting criteria (13% and 17%) were mentioned next as the top reasons for not testing across both regions. Compared to the US, EU5-based physicians had higher mentions of patients not meeting criteria (17% vs. 13%), tests not being reimbursed (7% vs. 5%) and treatment costs not being reimbursed (6% vs. 4%). The full distribution of reasons is shown in table 1 below.

Abstract 487 Table 1 Reasons for not testing

Table 1 Reasons for not testing	US (n=2,114)	EU5 (n=9,002)	UK (n=1,876)	FR (n=1,672)	DE (n=1,448)	IT (n=2,035)	ES (n=1,873)
Denotes significant difference at p<0.05	U	A	B	C	D	E	F
Will only test after progression	27%	25%	32% ^{CDEF}	24%	25% ^E	27% ^F	20%
Lack of data regarding clinical utility	18% ^A	16%	17%	19% ^F	18% ^F	16%	14%
Patient did not meet criteria	13% ^A	17%	19% ^{DEF}	17% ^E	26% ^{BCDEF}	12%	15%
Lack of targeted therapies for this test	6%	7%	6%	6%	13%	6%	7%
Test not reimbursed	5% ^A	7%	9% ^{CDE}	4%	6%	6%	10% ^{CDE}
Cost of testing	5%	5%	5% ^{DF}	8% ^{ABCF}	2%	6% ^{DF}	2%
Treatment cost / drug not reimbursed	4% ^A	6%	10% ^{CDEF}	3%	5%	6% ^C	7% ^C
Patient tested positive for other markers	4% ^A	7%	3%	7% ^B	13% ^{BCE}	6% ^B	10% ^{BCE}

Conclusions Despite recommendations in guidelines, physicians in the US and EU5 often forgo testing to wait until after progression, because of a perceived lack of clinical utility or because they deem the patient ineligible for testing. While individual countries differ on their approaches to testing - some are more cost sensitive (UK, France) while others are more discerning as to which patients are eligible for testing (Germany) - a concerted effort is needed to educate physicians on the clinical utility of biomarker testing.

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488 THE IMPACT OF EDUCATION ON NOVEL CONCEPTS IN METASTATIC MELANOMA: TRIPLET THERAPY

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Background Advanced melanoma treatment selection is guided by BRAF-mutation status and patient and disease-specific factors. Historically, oncologists decided between targeted therapy or immune checkpoint inhibitors (ICI). However, given the differences in onset of activity, response durability, and adverse

events combination BRAF/MEK inhibitors and ICI (triplet therapy) are being evaluated to optimize outcomes. With several trials due to report, oncologists need education to stay up-to-date on the available data and contextualize this potential treatment option.

Methods An online continuing education (CME) activity consisting of a multi-media 30-minute video panel discussion explored the rationale, available clinical trial data, and future directions of triplet therapy for the treatment of advanced BRAF-mutated melanoma.¹ Educational effect was assessed using a repeated pairs pre-assessment/post-assessment study design and compared the pre- and post-assessment responses. A chi-square test was used to identify differences between pre- and post-assessment responses. Effect size was calculated using Cramer's V test by determining the strength of the association between the activity and the outcomes ($V = 0.16$ – 0.26 is considerable and $V > 0.26$ is extensive). P values were calculated and those < 0.05 were considered statistically significant. Data from oncologist participants were collected between 12/23/2019 through 2/26/2020.

Results Participation in education resulted in statistically significant improvements and noticeable educational effect for oncologists ($n=49$; $p < 0.05$, $V=0.136$). • 39% of pre-assessment questions were correctly answered increasing to 52% post-assessment • 15% of oncologists had a measurable improvement in confidence regarding the rationale for use of triplet therapy in advanced melanoma • Significant improvement in knowledge regarding clinical trial data in triplet therapy was observed (35% vs. 55%; $p < 0.05$, $V = 0.205$)

Conclusions This online, interactive, expert-led, CME-certified educational activity resulted in significant gains in oncologist knowledge and confidence regarding triplet therapy in the management of melanoma. These results demonstrate the effectiveness of on-demand education but also highlight an ongoing need for education on this topic as further data becomes available.

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THE IMPACT OF EDUCATION ON NOVEL CONCEPTS IN ADJUVANT MELANOMA: A CLOSER LOOK AT HIGH RISK STAGE II DISEASE

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Background Adjuvant therapy for patients with melanoma is currently recommended for patients with stage III disease with either immune checkpoint inhibitors or combination dabrafenib/trametinib based on BRAF-status. Adjuvant treatment demonstrates improvement in recurrence-free survival and overall survival. However, risk models suggesting that patients with stage IIB/IIC disease may have a higher risk of recurrence than patients with stage IIIA disease have prompted exploration into the use of adjuvant therapy in this patient subgroup as well. With several ongoing trials due to report, oncologists

need education to stay up-to-date on the available data and contextualize this potential treatment option to implement therapy at the earliest point of clinical benefit to patients while also collaborating with surgical teams for optimal care planning.

Methods An online continuing education (CME) activity consisted of a multi-media 30-minute video panel of a medical oncologist and surgical oncologist discussing the rationale, available clinical trial data, and future directions of adjuvant therapy for the treatment of patients with stage II melanoma.¹ Educational effect was assessed using a repeated paired pre-assessment/post-assessment study design and compared the pre- and post-assessment responses. A chi-square test was used to identify differences between pre- and post-assessment responses. Effect size was calculated using Cramer's V test by determining the strength of the association between the activity and the outcomes ($V = 0.16$ – 0.26 is considerable and $V > 0.26$ is extensive). P values were calculated and those < 0.05 were considered statistically significant. Data from 65 oncologists and 138 surgeons are represented here through 8/12/2020.

Results Participation in education resulted noticeable educational effects for both oncologists ($p < 0.01$, $V=0.143$) and surgeons ($p = 0.001$, $V=0.114$): Statistically significant improvements in knowledge and competence were also seen regarding: -Knowledge regarding the rationale for adjuvant therapy in stage II diseaseo Oncologists: 46% pre; 69% post, $p < 0.01$ o Surgeons: 24% pre; 36% post, $p < 0.05$ -Competence utilizing patient and tumor characteristics to identify potential candidates for adjuvant therapy in stage II diseaseo Oncologists: 52% pre; 77% post, $p < 0.01$ o Surgeons: 29% pre; 43% post, $p < 0.05$ -Increase in confidence was also observed for coordinating with the multidisciplinary team to augment surgical care with potential systemic adjuvant treatment for eligible patientso 22% improvement for oncologists o 19% improvement for surgeons

Conclusions This online, interactive, multi-media, expert-led, CME-certified educational activity resulted in significant gains in oncologist and surgeon knowledge and competence with improvements in confidence regarding the role of adjuvant therapy in the management of high risk stage II melanoma and recommending clinical trials for eligible patients. These results demonstrate the effectiveness of education, especially in online and on-demand formats and those requiring cross-discipline collaboration, and also highlights an ongoing need to further educate on this topic.

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AN IMMUNO-ONCOLOGY CENSUS: ASSESSMENT OF CLINICIAN KNOWLEDGE AND EDUCATIONAL NEEDS IN 2020

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