

# Aggiornamenti ASCO 2018 neoplasie toraciche

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#### **Aggiornamenti:**

Lung cancer prevention Surgery in Lung cancer "Other "

CN1 FORMAZIONE



# Lung cancer prevention



#### Abstract 6504 (Oral Session)

Lung cancer screening rates: Data from the lung cancer screening registry.



## Lung Cancer Screening

#### Discussion: Comparison of USPSTF cancer screenings





#### Summary/Conclusions

- Annual LDCT screening (1.9% → 3.5%) remains inadequate across the United States following USPSTF recommendations, especially when compared to the other known cancer screenings.
- Effective screening can prevent 12,000 premature lung cancer deaths per year



#### Tobacco Dependence Predicts Higher Lung Cancer and Mortality Rates and Lower Rates of Smoking Cessation in the National Lung Screening Trial

Alana M. Rojewski, PhD; Nichole T. Tanner, MD; Lin Dai, PhD; James G. Ravenel, MD; Mulugeta Gebregziabher, PhD; Gerard A. Silvestri, MD; and Benjamin A. Toll, PhD

	1	FTND	HSI		
Variable	OR	95% CI	OR	95% CI	
Low dependence	0.94	0.76-1.16	0.95	0.80-1.14	
Medium dependence	0.67	0.54-0.84	0.75	0.63-0.89	
High dependence	0.71	0.58-0.87	0.72	0.60-0.85	
Very high dependence	0.59	0.48-0.73	0.59	0.49-0.72	

#### TABLE 2 ] Likelihood of Quitting Smoking by Level of Dependence According to FTND and HSI

Chest 2018, article in press

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#### Trends in lung cancer and smoking behavior in Italy: an alarm bell for women

Annalisa Trama<sup>1</sup>, Roberto Boffi<sup>2</sup>, Paolo Contiero<sup>1</sup>, Carlotta Buzzoni<sup>1</sup>, Roberta Pacifici<sup>5</sup>, Lucia Mangone<sup>5</sup>; AIRTUM Working Group<sup>\*</sup>

A point of concern is that in just 1 year (from 2016 to 2017) the number of smoking women

increased from 4.6 million to 5.7 million whereas the number of smoking men decreased from 6.9 to 6 million.



#### European position statement on lung cancer screening

Matthijs Oudkerk, Anand Devaraj, Rozemarijn Vliegenthart, Thomas Henzler, Helmut Prosch, Claus P Heussel, Gorka Bastarrika, Nicola Sverzellati, Mario Mascalchi, Stefan Delorme, David R Baldwin, Matthew E Callister, Nikolaus Becker, Marjolein A Heuvelmans, Witold Rzyman, Maurizio V Infante, Ugo Pastorino, Jesper H Pedersen, Eugenio Paci, Stephen W Duffy, Harry de Koning, John K Field

3 All future screenees entering into early detection programmes for lung cancer should be provided with carefully constructed participant information on the potential benefits and harms of screening to enable them to make an informed decision as to whether they wish to participate or not. Smoking cessation advice should be offered to all active smokers.



#### **Current Lung Cancer Screening Paradigm is Not Widely Adopted**

Early Detection of Lung Cancer is a High Unmet Medical Need



- Low-dose computed tomography (LDCT) improves lung cancer mortality in high-risk individuals
- Rate of clinical adoption remains low (1.9%)<sup>2,3</sup>
- Criticisms of LDCT include risk of false positives and logistical challenges<sup>4</sup>

cfDNA-Based Tests Represent an Untapped Opportunity for Cancer Detection

- Cancer genotyping using plasma cfDNA
  - Adopted for detection of specific actionable mutations
  - Only validated for advanced cancer
  - Uses smaller targeted gene panels
- Cancer detection using plasma cfDNA
  - Aims to identify a broader cancer
     "signature" rather than specific individual mutations
  - Genome-wide approaches offer additional information that allow early detection
  - Could address the unmet medical need

National Lung Screening Trial Research Team. N Engl J Med 2011; 365:395 409. <sup>2</sup>Pham D et al. J Clin Oncol 36, 2018 (suppl; abstr 6504). <sup>3</sup>Jemal A, Fedewa SA, JAMA Oncol 2017;3:1278 1281. <sup>4</sup>McCunnet RJ et al. Chest Journal 2014;145(3):618-24.



FPI: 08/2016; 11,648 enrolled; Target: Complete Enrollment of all 15,000 Participants in 2018

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#### CCGA is a Prospective Longitudinal Cohort Study Designed for Early Cancer Detection: First Training and Test Set Analyses



#### Simulating Existing Assays: Not Optimized for Screening

- 561 non-cancer and 118 pts with lung cancer from CCGA analyzed
- Testing a single location (emulating ddPCR) without WBC filtering
  - KRAS:p.G12X

(1)

- Excellent specificity
- Small number of cancer cases detected
- NGS panel reporting 813 clinically actionable variants (OncoKB levels 1-4)\* without WBC filtering
  - Many cancer cases with variants
  - Many non-cancer cases with variants
- CCGA Targeted Assay with WBC filtering
  - Increased detection
  - Reduced false-positives (set at 98% here)
  - Continuous statistical score allows for tradeoffs in sensitivity/specificity



\*Chakravarty D et al. JCO Precis Oncol 2017;doi: 10.1200/PO.17.00011. Epub 2017 May 16

# Results

#### Conclusions

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- This first interim analysis of the CCGA study (2,800 participants, 174 with lung cancer) shows:
  - Comprehensive sequencing of plasma cfDNA generates high-quality data across the spectrum of genomic features that permits non-invasive cancer detection
  - These assays detect lung cancer across stages, histologies, and populations, and results replicate in an independent test set
  - WBC-derived mutations and copy number variations are a major source of potential false positives that must be accounted for to achieve high specificity
- Together, these early results support the promise of using cfDNA-based sequencing to develop an early cancer detection test with high specificity
  - Further assay and clinical development in large-scale clinical studies is ongoing
    - CCGA (NCT02889978): remaining participants for further training and clinical validation

PRESENTED IN Geoffrey R. Oxnard, MD

STRIVE (NCT03085888): clinical validation in an intended use population



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# About liquid biopsies...

## Key points

- Biopsies are a fundamental part of lung cancer care, and will never be eliminated
- A good liquid biopsy <u>can</u> replace <u>some</u> inconvenient tumor biopsies
- <u>But</u>... don't let a <u>bad</u> liquid biopsy supplant an inconvenient tumor biopsy
- Liquid biopsies may create new opportunities impossible with tumor biopsies



HARVARD MEDICAI

Presented By Geoffrey Oxnard at 2018 ASCO Annual Meeting

# Meeting Abstracts

Home Search Abstracts Browse Abstracts Meeting Home

Potential role of serial liquid biopsies to guide treatment decisions in NSCLC.

Sub-category: Metastatic Non-Small Cell Lung Cancer

Citation:

J Clin Oncol 36, 2018 (suppl; abstr e21079)

Author(s): Todd Cory Knepper, Theresa A. Boyle, Jhanelle Elaine Gray, James Kevin Hicks; H. Lee Moffitt Cancer Center & Research Institute, Tampa, FL; Department of Pathology, Moffitt Cancer Center, Tampa, FL; Moffitt Cancer Center, Tampa, FL

**Results:** 17 pts with NSCLC had serial liquid biopsies (35 total tests) performed. GAs were detected in 14 pts (82.4%) (median = 4 GAs per test; range = 0-13). <u>Of the 14</u> pts with GAs detected, none of the intra-patient reports were identical. New GAs were detected in 13 (92.9%) pts and GAs were lost in 4 (28.6%). [...]

Conclusions: The <u>results of serial liquid biopsies performed on pts</u> with NSCLC are not static with none having identical results

**between tests.** Serial liquid biopsies revealed clinically important results with known resistance alterations detected on the subsequent test in 27.3% of cases treated with EGFR inhibitors and previously undetected potentially targetable alterations detected in 42.9% of cases.





# Surgery in Lung Cancer





#### Lymph Node Collection Kit

#### Non-small Cell Lung Cancer: Low Tech to High Tech\*

David Harpole, M.D. Professor of Surgery Associate Professor of Pathology Director of the Duke Thoracic Oncology Laboratory Duke University Medical Center Dutham, NC USA

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#### Wicked Heterogeneity Across NCDB Institutions

	Community	Comprehensive Community	Academic/Research NCI-designate Comprehensi				
Quality of lymph node examination							
pNX rate* 9 7 6 5							

#### Patients: Kit v Non-Kit Resections

Prospective study:1,171 resections\*, 32 surgeons; 650 (56%) kit cases by 20 surgeons

	Kit	Non	Р
Mean age, years	68	67	0.03
Female sex	53	48	0.09
Race White/black	80/18	76/23	0.12
Insurance Medicare Commercial Medicaid	43 18 36	43 17 37	0.52
Histology Adeno Squamous Other	46 28 25	51 31 18	<.0001
Extent of resection Pneumonectomy Lobe/bilobectomy Sublobar	3 91 6	6 76 18	<.0001

	Kit <sup>†</sup>	Nont	P
Clinical Stage I II III IV	72 16 8 4	68 15 10 0	0.18
Technique of resection Open Robotically-assisted Video-assisted	42 44 14	52 28 20	<.0001
Pathologic stage IA1 IA2 IA3 IB IIA IIB IIIA IIIB IV	5 20 14 22 4 17 13 3 1	4 26 15 21 2 18 12 2 0	0.23

\*Primary surgical resections, excluding neoadjuvantly treated patients; \*percentage unless otherwise indicated

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#### **Conceptual Model: The Chain of Responsibility**



#### It is the Kit, Not Heightened Awareness

Indicates 'mandatory' Pre-labelled with anatomic nome



 Post-Implementation with the kit has better quality than pre-implementation levels

 Post-Implementation cases without the kit have quality closer to pre-implementation

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## **Prospective randomized trial**



#### Waiting for results.....





# Systemic treatments





#### Bending the disease free and progression free survival curves in lung cancers

Stage III Inoperable and Unresectable Lung Cancers: Durvalumab vs Placebo after Concurrent Chemotherapy & Radiation



#### r > What, When, and How? Juggling ...





°Signals of immunogenic cell death (ICD) . ang Y, Front Pharmacol 2018; Demaria S, JAMA Oncol



OX40 Agonists and Combination Immunotherapy: Putting the Pedal to the Metal



Melero I et at. Evolving synergistic combinations of targeted immunotherapies to combat cancer. Nat Rev 2015

#### ANTI-PD/PD-L1 AS BACKBONE TO A.S.L. CN1 Azienda Sanitaria Locale d Cunno, Mondovi e Savigiano

Nivolumab	Pembrolizumab	Atezolizumab	Durvalumab
<ul> <li>Chemotherapy</li> <li>Radiation/ablation</li> <li>EGFR/ALK TKI</li> <li>Anti-VEGF/VEGFR inhibitor</li> <li>Vasc disrupt agent</li> <li>Hypomethylating agent</li> <li>HDAC inhibitor</li> <li>SPK inhibitor</li> <li>C-Met inhibitor</li> <li>Glutaminase inhibitor</li> <li>Dasatinib</li> <li>Vaccine</li> <li>Gene therapy</li> <li>IL15 agonist</li> <li>PEG IL10</li> <li>TGF<sub>β</sub>R1 inhibitor</li> <li>Anti-CD27</li> <li>Anti-CSF-1R</li> <li>IDO-1 inhibitor</li> <li>Anti-CSF-1R</li> <li>IDO-1 inhibitor</li> <li>Anti-LAG</li> <li>Anti-LAG</li> <li>Anti-TIM-3</li> <li>Anti-KIP</li> </ul>	<ul> <li>Chemotherapy</li> <li>Radiation</li> <li>EGFR/ALK TKI</li> <li>Anti-VEGF/VEGFR inhibitor</li> <li>Hypomethylating agent</li> <li>HDAC inhibitor</li> <li>CDK inhibitor</li> <li>BTK inhibitor</li> <li>BTK inhibitor</li> <li>PI3K inhibitor</li> <li>KIT/CSF1R/FLT3 inh</li> <li>FGFR inhibitor</li> <li>JAK1 inhibitor</li> <li>GRM1 inhibitor</li> <li>FAK inhibitor</li> <li>Anti-EGFR</li> <li>Anti-CEACAM1</li> <li>PEG hyaluronidase</li> <li>Vaccine</li> <li>Oncolytic</li> <li>PEG IL10</li> <li>Anti-CSF-1</li> <li>IDO1 inhibitor</li> <li>Anti-CTLA4</li> <li>Anti-CTLA4</li> </ul>	<ul> <li>Chemotherapy</li> <li>Radiation</li> <li>EGFR/ALK TKI</li> <li>Anti-VEGF/Ang-2</li> <li>MEK inhibitor</li> <li>Vaccine</li> <li>Adoptive cell therapy</li> <li>Anti-CEA/CD3</li> <li>Anti-CEA/IL-2</li> <li>Anti-CD40</li> <li>Anti-CD27</li> <li>Anti-CSF-1</li> <li>Adenosine A2A inhibitor</li> <li>IDO-1 inhibitor</li> <li>Anti-CTLA4</li> <li>Anti-TIGIT</li> </ul>	<ul> <li>Chemotherapy</li> <li>Radiation</li> <li>EGFR/ALK TKI</li> <li>VEGFR inhibitor</li> <li>BTK inhibitor</li> <li>BTK inhibitor</li> <li>MEK inhibitor</li> <li>HAD inhibitor</li> <li>PARP inhibitor</li> <li>VEE1 inhibitor</li> <li>ATR inhibitor</li> <li>ATR inhibitor</li> <li>ATR inhibitor</li> <li>CXCR4 inhibitor</li> <li>CSF</li> <li>Anti-CD73</li> <li>Anti-CCR4</li> <li>Anti-CSF1R</li> <li>Anti-NKG2A</li> <li>Adenosine A2a inhibitor</li> <li>IDO1 inhibitor</li> <li>Anti-PD-1</li> </ul>

Avelumab: ALK inhibitor (crizotinib and lorlatinib), anti-41BB, anti-OX40

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di Cuneo, Mondovì e Savia

#### Immunotherapy plus chemotherapy



#### Immunotherapy plus immunotherapy



#### **Immunotherapy plus radiotherapy**





# Early stage

Abstract #8510 Phase III Neoadjuvant Trials of Immune Checkpoint Inhibitors

	IMPower030	Checkmate 816	KEYNOTE 671	
Agent Atezolizumab		Nivolumab	Pembrolizumab	
Patients Planned	Patients Planned 302		786	
Stages II-IIIB		IB-IIIA	IIb-IIIA	
Endpoints (1st/2nd)	MPR/EFS-PCR	EFS-PCR/MPR	EFS-OS/MPR-PCR	
Arms Atezo-Chemo Chemo		lpi-Nivo Nivo-Chemo Chemo	Pembro-Chemo Chemo	

Phase III Adjuvant Trials of Immune Checkpoint Inhibitors

	ANVIL	BR.31	IMPower010	EORTC 1416
Agent	Nivolumab	Durvalumab	Atezolizumab	Pembrolizumab
Patients Planned	714	1360	1127	1380
Endpoints	DFS	DFS	DFS	DFS
Duration of ICI	1 year	1 year	1 year	1 year



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# **Biomarkers**





# **Biomarkers**

Abstract 12000

8:00 AM - 8:12 AM

Association of high tissue TMB and atezolizumab efficacy across multiple tumor types.

Fatema A. Legrand, PhD - First Author • Disclosure Roche/Genentech

Abstract 12001 8:12 AM - 8:24 AM

Prospective clinical evaluation of blood-based tumor mutational burden (bTMB) as a predictive biomarker for atezolizumab (atezo) in 1L non-small cell lung cancer (NSCLC): Interim B-F1RST results.

Vamsidhar Velcheti, MD - First Author • Disclosure Taussig Cancer Institute, Cleveland Clinic

Tumor biology oral session Tuesday, June 5, 8-11AM,

#### Circulating Biomarkers

Poster Board: #239 • Abstract 3025 Serum interleukin 8 (IL-8) may serve as response to immuno-oncology (I-O) the	a biomarker of rapy.
Michael Carleton, PhD - First Author	
Bristol-Myers Squibb	2,000
Poster Board: #305 · Abstract 3091	cases
Phase I trial of BMS-986253, an anti-IL- antibody, in patients with metastatic o solid tumors.	8 monocional r unresectable
Julie Marie Collins, MD, MPH - First Author	
National Cancer Institute	Monother
Poster Board: #319a · Abstract TPS3109	ару
Phase 1b/2 study of nivolumab in combi anti-IL-8 monoclonal antibody, BMS-986 biomarker-enriched population of patien advanced cancer.	nation with an 253, in a nts with
Ignacio Melero Bermejo, MD, PhD - First Author Clinica Universidad de Navarra	Combinati



## **Overall Survival by PD-L1 TPS**



Key-Note 189 phase III trial



1.00 -

- Retrospective testing from CheckMate 026, 012, and 568 informed selection of the TMB cutoff (≥10 mut/Mb)<sup>1–3</sup>
- ORR increased in patients with higher TMB, and plateaued at TMB ≥10 mut/Mb



#### CheckMate 568: ROC for TMB by ORR irrespective of tumor PD-L1 expression (n = 98)

9-10 mut/Mb

False-positive fraction

0.75

1.00

1. Carbone DP, et al. N Engl J Med 2017:376:2415-2426; 2. Hellmann MD, et al. Cancer Cell 2018. doi: https://doi.org/10.1016/j.ccell.2018.03.018. Epub; 3. Ramalingam S, et al. Presented at AACR Annual Meeting; April 14-18, 2018: Chicago, IL, USA, CT078,



# **New options?**



Joursel Ma, et al ASCO 2019 Alestrait 5002

Presented by Novello S. Critical Review POST-ASCO 2018

#### Focus on initial response or on A.S.L. CN1 Azienda Sanitaria Locale d Curee, Mondoir e Savigiero

#### Clinical and molecular features predicting <u>long-term</u> <u>response (LTR)</u> to anti-PD-(L)1 based therapy in patients with NSCLC

- Responders with LTR vs STR: Depth of response, but not tumor burden, correlated with LTR
  - Greater proportion of patients with BOR <-50% and <-80% in LTR</li>



• Baseline tumor burden in patients with LTR is similar to those with STR



Smoking status, PD-L1 expression, and TMB correlate with long-term response in NSCLC patients treated with anti-PD-(L)1 based therapy. **TMB**, **but not PD-L1 expression**, **is distinctly increased in those with LTR compared to those with transient response**. The features predicting initial response compared to durable response may be distinct.

Rizvi H, et al. ASCO 2018. Abstract 9022.



# Infine....





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#### Goals of care

## Patient & Oncologist Discordance in Goals of Care in EOL Decision Making

#### Funded by NINR: NRO14856

Sara L. Douglas, PhD, RN<sup>1</sup>, Barbara J. Daly, PhD, RN<sup>1</sup>, Neal J. Meropol, MD<sup>2</sup>, Amy R. Lipson, PhD<sup>3</sup>

<sup>1</sup> Case Western Reserve University, School of Nursing & Case Comprehensive Cancer Center, Cleveland, OH
<sup>2</sup> Flatiron Health, New York, NY; Case Comprehensive Cancer Center; Case Western Reserve University.
<sup>3</sup> Case Western Reserve University, School of Nursing

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http://clicktoeditURL.com



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		Question	Concordance	e betwe	en goals of patients	and their	oncolog	lists
PRESEN	TED AT 2018 AS ANINUAL M	Strategy	168 patients questioned e	with ad very 3	vanced cancer and months: quality of lif	their 8 on e vs lengt	cologists h of life	5
		Methods	Discordance:	40 poi	nt diff, scale from 0	(QOL) – 1	00 (leng	jth)
		Findings	Pts goal Pts goal Oncs goal Discordance	vs vs vs in 30%	onc goal, onc view of pts goa onc view of pts goal , persisted from enre	r = I, r = I, r = ol't to dea	= .13 = .29 = .71 th in 77°	%
		Conclusions	Substantial d Oncologists t	liscorda hought	nce persisted from patients' goals were	enrolment e similar to	t to deat o their o	h wn
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# E per noi??

## ASCO Meeting Library

A feasibility study to examine the role of a mindfulness-based wellness curriculum for early clinical

 trainees.
 Authors:

 Monica Sheila Chatwal, Marc McDowell, Christine Vinci, Richard R. Reich, Angela Reagan, Jhanelle Elaine Gray;

 Presented Monday, June 4, 2018

# 45%-80% of practicing oncologists worldwide reporting symptoms of burnout (Hlubocky et al. ASCO 2017)

A total of **six monthly 30 minute sessions**. Participants will complete questionnaires pre- and post-intervention.

**Primary aim is feasibility** determined through recruitment, participation, completion and compliance rates.

**Secondary aim is acceptability**, assessed using post-intervention questions addressing usefulness of the program. 27 of 28 eligible participants have enrolled and completed pre-session questionnaires.

Mindfulness is a strategy that can be used to recognize and cope with stress and burnout and foster resiliency. The goal is not to focus on relaxation, but rather on self-awareness, thus extending into a form of "reflective practice"



## Opportunities to Cure More Patients with Localized Lung Cancers Take Home Messages: Re-imagine Care

- The goal of care is cure. The risk-benefit analysis here is different than when caring for patients with extra-thoracic metastases
- All members of the multimodality team need to promote and support the overall regimen and not just individual components
- With more modalities, more agents, and less lifestyle disruption by all our modalities, re-imagine both care and research for all individuals with localized lung cancers
- Choosing "the best" for each component matters

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 Achieving optimal results requires even closer attention to the sequence, timing, and benefits of concomitant use







# Grazie

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