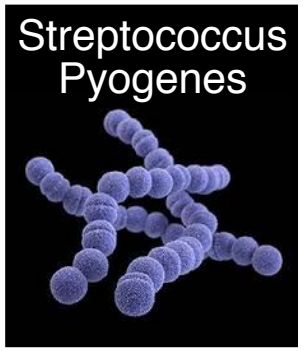
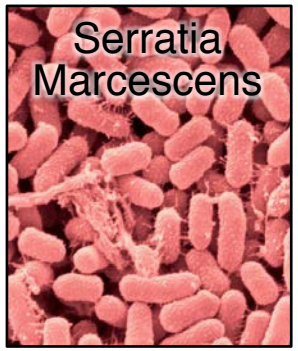
2020
Year in Review
Endometrial and Cervical Cancers

Richard T Penson MD MRCP
Clinical Director Medical Gynecologic Oncology
Massachusetts General Hospital

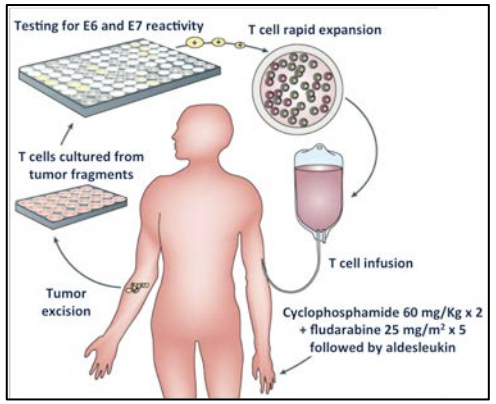
History of Immunotherapy





Coley's Toxin 1891

Abs 1956



Pembrolizumab Lenvatinib (Acc.) 9/19/19

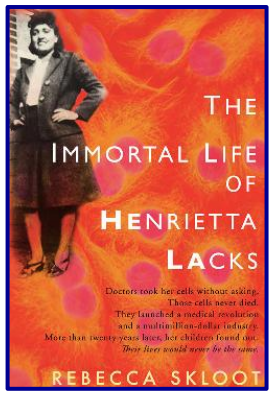
Pembrolizumab MSI-H/dMMR 5/23/17

Pembrolizumab Cervical Cancer 6/12/18

Pembrolizumab 9/4/14 Nivolumab 12/22/14

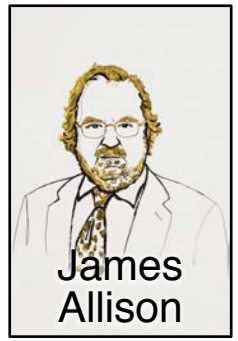
Ipilimumab 3/25/11

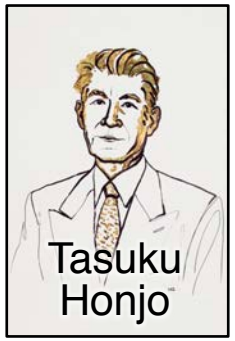
1960 1970 1980 1990 2000 2010 2020



Bacille Calmette-Guérin (BCG) 1976

IL2 1991





Morgan DA, et al. *Science*. 1976;193:1007-1008; Morales A, et al.*J Urol.* 1976;116:180-182; Decker WK, et al. *Cytokine Growth Factor Rev*. 2009;20:271-281; Yuraszeck T, et al. *Clin Pharmacol Ther*. 2017;101:634-645; Hinrichs CS, et al. *J Clin Oncol*. 2014;32(5s):LBA3008.

Courtesy of Richard T Penson, MD, MRCP

Promise of Molecular Biomarkers: TCGA Subgroups

Subgroup	Incidence TCGA	Incidence GOG210	Cancer Mortality
Copy # Low	40%	49%	5%
TP53 mut	30%	8%	19%
MSI+ / MMR-deficient	25%	39%	8%
POLE	5%	4%	3%

Cosgrove CM, et al. Gynecol Oncol. 2018;148:174-180
Levine DA. Nature. 2013;497:67-73
MacKay HJ, et al. Oncotarget 2017;8:84579-84594

Courtesy of Richard T Penson, MD, MRCP

rapid communications

Efficacy of Pembrolizumab in Patients With Noncolorectal High Microsatellite Instability/ Mismatch Repair–Deficient Cancer: Results From the Phase II KEYNOTE-158 Study

Aurelien Marabelle, MD, PhD[1]; Dung T. Le, MD[2]; Paolo A. Ascierto, MD[3]; Anna Maria Di Giacomo, MD[4]; Ana De Jesus-Acosta, MD[2]; Jean-Pierre Delord, MD, PhD[5]; Ravit Geva, MD, MSc[6]; Maya Gottfried, MD[7]; Nicolas Penel, MD, PhD[8]; Aaron R. Hansen, MBBS[9]; Sarina A. Piha-Paul, MD[10]; Toshihiko Doi, MD, PhD[11]; Bo Gao, MBBS, PhD[12]; Hyun Cheol Chung, MD, PhD[13]; Jose Lopez-Martin, MD, PhD[14]; Yung-Jue Bang, MD, PhD[15]; Ronnie Shapira Frommer, MD[16]; Manisha Shah, MD[17]; Razi Ghori, PhD[18]; Andrew K. Joe, MD[18]; Scott K. Pruitt, MD, PhD[18]; and Luis A. Diaz Jr, MD[19]

J Clin Oncol 2020;38(1):1-10

Courtesy of Richard T Penson, MD, MRCP

Tumor Type Specific Antitumor Activity

TABLE 3. Antitumor Activity for Tumor Types With Greatest Enrollment

Tumor Type	No.	CR, No.	PR, No.	ORR, % (95% CI)	Median PFS, Months (95% CI)	Median OS, Months (95% CI)	Median DOR, Months (range)
Endometrial	49	8	20	57.1 (42.2 to 71.2)	25.7 (4.9 to NR)	NR (27.2 to NR)	NR (2.9 to 27.0+)
Gastric	24	4	7	45.8 (25.6 to 67.2)	11.0 (2.1 to NR)	NR (7.2 to NR)	NR (6.3 to 28.4+)
Cholangiocarcinoma	22	2	7	40.9 (20.7 to 63.6)	4.2 (2.1 to NR)	24.3 (6.5 to NR)	NR (4.1+ to 24.9+)
Pancreatic	22	1	3	18.2 (5.2 to 40.3)	2.1 (1.9 to 3.4)	4.0 (2.1 to 9.8)	13.4 (8.1 to 16.0+)
Small intestine	19	3	5	42.1 (20.3 to 66.5)	9.2 (2.3 to NR)	NR (10.6 to NR)	NR (4.3+ to 31.3+)
Ovarian	15	3	2	33.3 (11.8 to 61.6)	2.3 (1.9 to 6.2)	NR (3.8 to NR)	NR (4.2 to 20.7+)
Brain	13	0	0	0.0 (0.0 to 24.7)	1.1 (0.7 to 2.1)	5.6 (1.5 to 16.2)	–

9%

KEYNOTE-100
Matulonis UA, et al. Ann Oncol. 2019;30(7):1080-1087

Marabelle A, et al. J Clin Oncol 2020;38(1):1-10

Courtesy of Richard T Penson, MD, MRCP

Toxicities

TABLE 4. Incidence of Adverse Events

Adverse Event	Patients (N = 233) Any Grade, No. (%)	Grade 3-4*, No. (%)
Treatment-related adverse events		
Any	151 (64.8)	34 (14.6)
Occurring in ≥ 5% of patients		
Fatigue	34 (14.6)	2 (0.9)
Pruritus	30 (12.9)	0
Diarrhea	28 (12.0)	0
Asthenia	25 (10.7)	1 (0.4)
Hypothyroidism	19 (8.2)	0
Arthralgia	18 (7.7)	0
Nausea	15 (6.4)	0
Rash	12 (5.2)	0

Marabelle A, et al. J Clin Oncol 2020;38(1):1-10

Courtesy of Richard T Penson, MD, MRCP

Summary

Impact on Patient Care and Treatment Algorithms

- FDA approved tissue agnostic May 23rd, 2017
- Exciting new standard of care
- Earlier use of IO more common
- Goal: control not cure Rx beyond 2yrs standard

Implications for Future Research

- IO vs. chemotherapy UNK
- CRISPRing in MMR deficiency potential strategy

Courtesy of Richard T Penson, MD, MRCP

original reports

Lenvatinib Plus Pembrolizumab in Patients With Advanced Endometrial Cancer

Vicky Makker, MD[1]; Matthew H. Taylor, MD[2]; Carol Aghajanian, MD[1]; Ana Oaknin, MD, PhD[3]; James Mier, MD[4]; Allen L. Cohn, MD[5]; Margarita Romeo, MD, PhD[6]; Raquel Bratos, MD[7]; Marcia S. Brose, MD, PhD[8]; Christopher DiSimone, MD[9]; Mark Messing, MD[10]; Daniel E. Stepan, MD[11]; Corina E. Dutcus, MD[12]; Jane Wu, PhD[12]; Emmett V. Schmidt, MD, PhD[13]; Robert Orlowski, MD[13]; Pallavi Sachdev, PhD[12]; Robert Shumaker, PhD[11]; and Antonio Casado Herraez, MD, PhD[14]

J Clin Oncol 2020;38(26):2981-2992

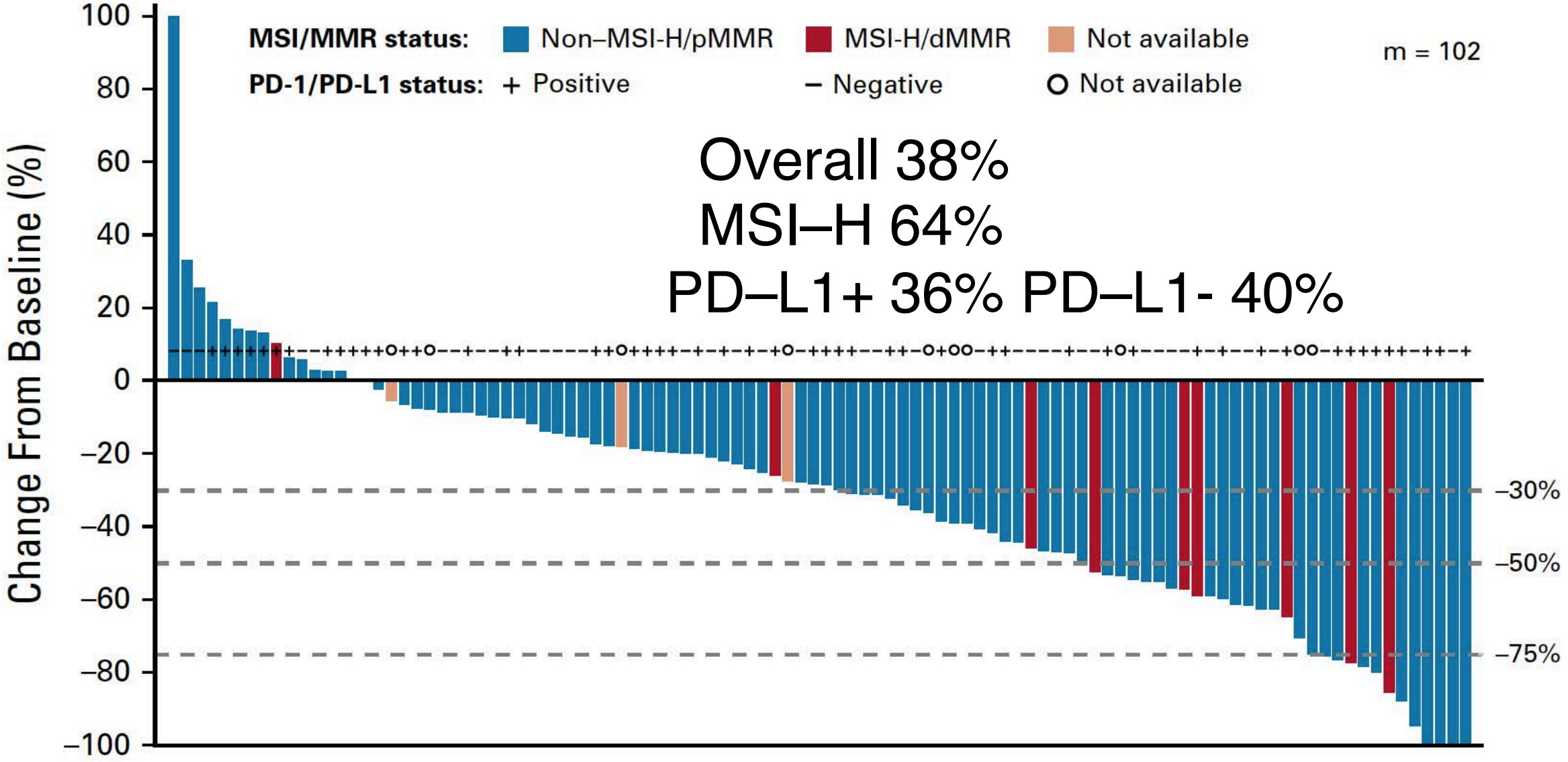
Lenvatinib 20 mg PO QD pembrolizumab 200 mg IV Q21

Primary end point: ORRWk24

n=108

Courtesy of Richard T Penson, MD, MRCP

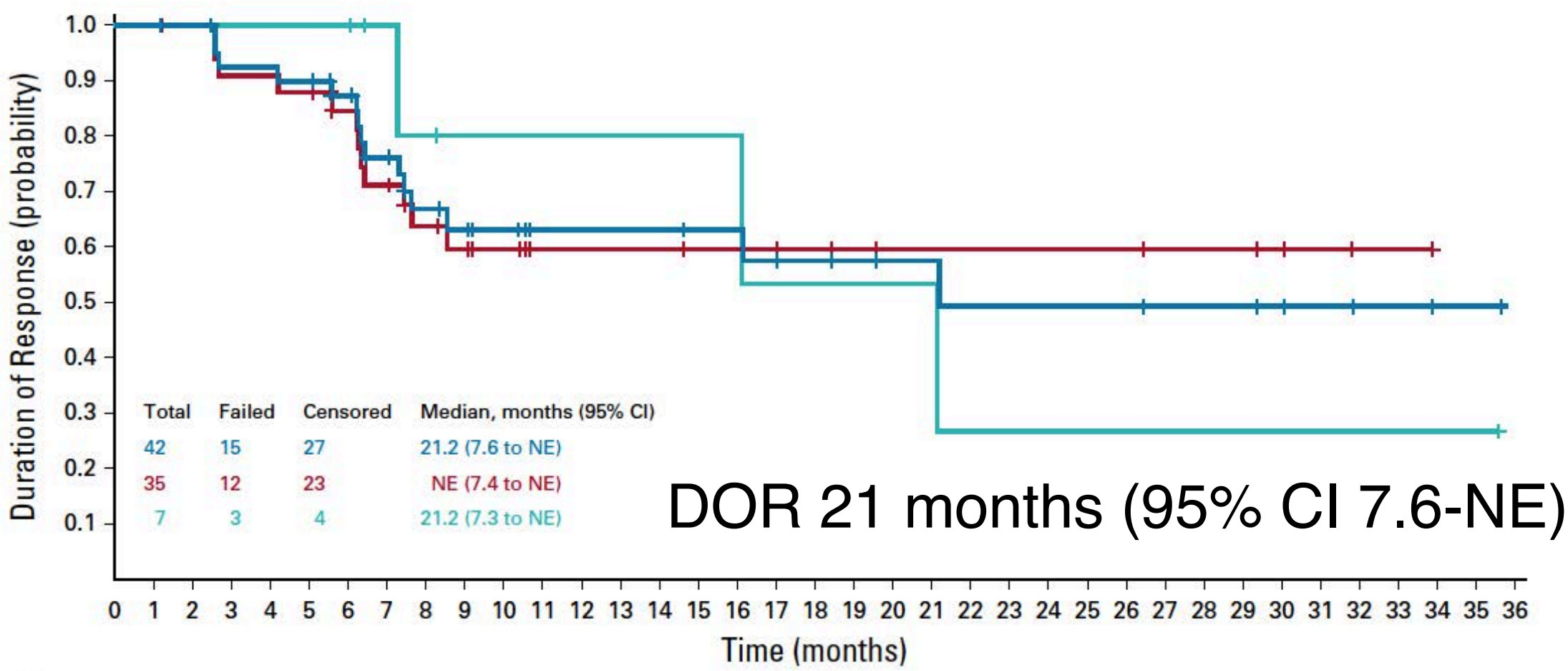
Objective Response Rate (ORRWk24)



Makker, et al. J Clin Oncol 2020;38(26):2981-2992

Courtesy of Richard T Penson, MD, MRCP

Duration of Response



DOR 21 months (95% CI 7.6-NE)

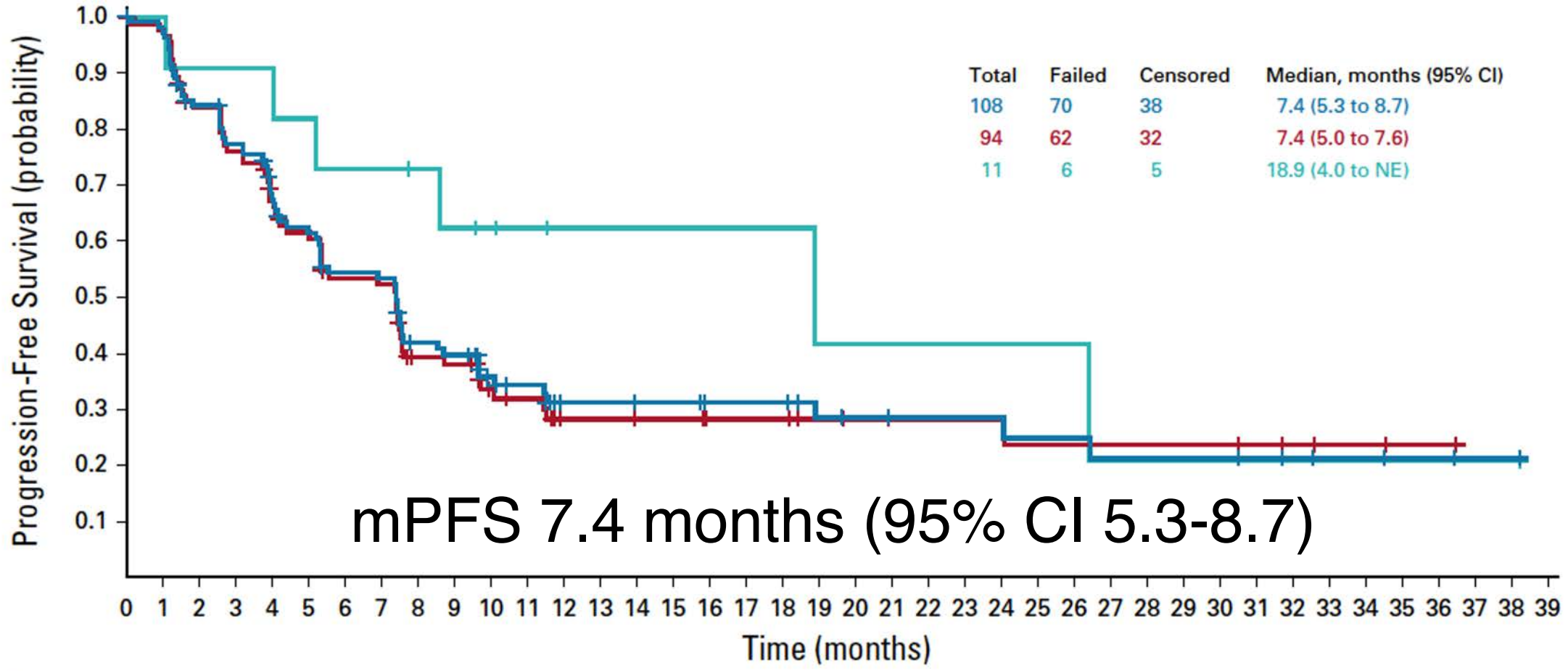
No. at risk:

Total in EC 2L+	42	42	41	37	37	36	32	26	21	17	15	12	12	12	12	11	11	9	9	8	7	7	6	6	6	6	6	5	5	5	4	3	2	2	1	1	0
MSS/pMMR	35	35	34	30	30	29	25	21	17	14	12	9	9	9	9	8	8	7	7	6	5	5	5	5	5	5	5	4	4	4	3	2	1	1	0	0	0
MSI-H/dMMR	7	7	7	7	7	7	7	5	4	3	3	3	3	3	3	3	3	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0

Makker, et al. J Clin Oncol 2020;38(26):2981-2992

Courtesy of Richard T Penson, MD, MRCP

Progression Free Survival



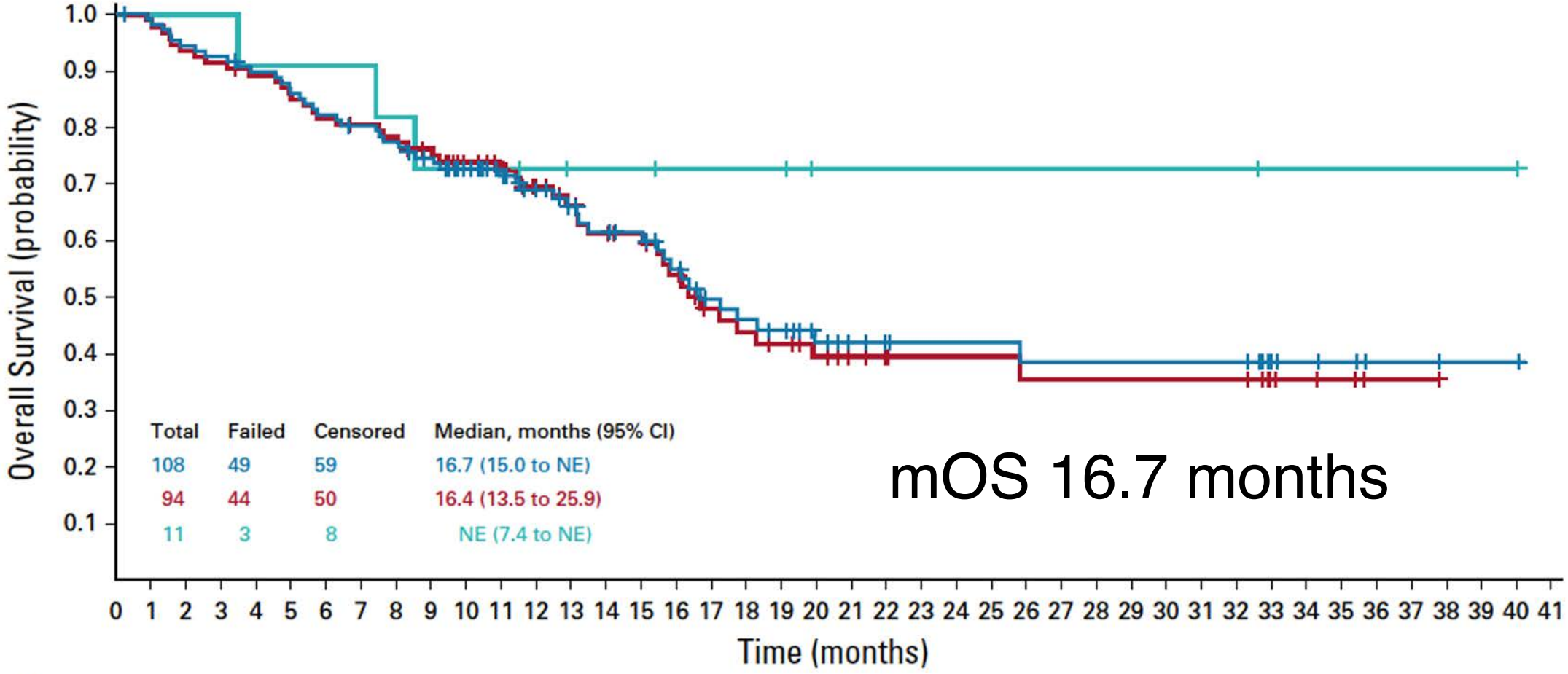
No. at risk:

Total in EC 2L+	108	105	88	80	69	61	53	52	37	35	25	22	16	16	15	15	13	13	13	10	9	8	8	8	8	7	7	6	6	6	6	5	4	3	3	2	2	1	1	0
MSS/pMMR	94	91	76	69	59	52	45	44	30	29	20	18	13	13	12	10	10	10	10	8	7	6	6	6	6	5	5	5	5	5	5	4	3	2	2	1	1	0	0	0
MSI-H/dMMR	11	11	10	10	10	9	8	8	7	6	5	4	3	3	3	3	3	3	3	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	0

Makker, et al. J Clin Oncol 2020;38(26):2981-2992

Courtesy of Richard T Penson, MD, MRCP

Overall Survival



mOS 16.7 months

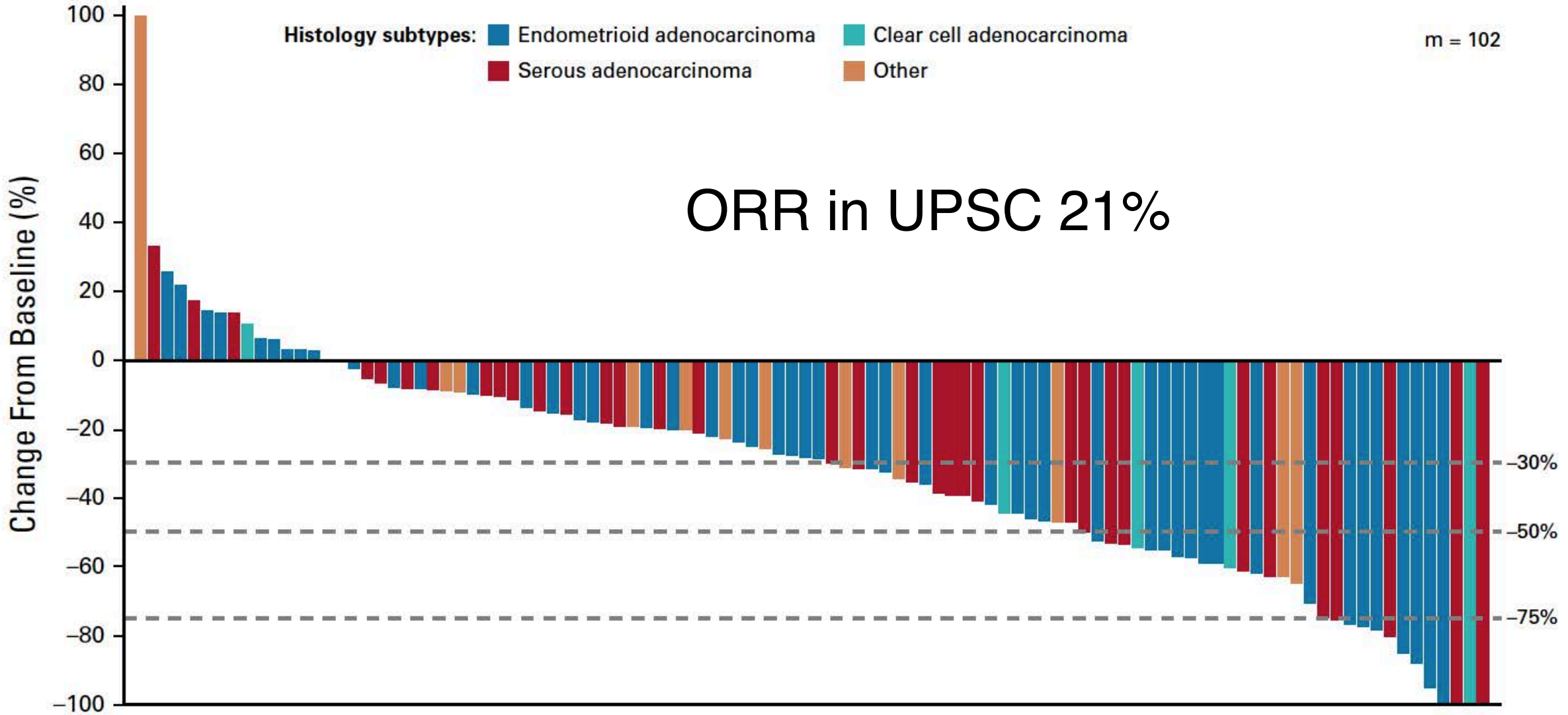
No. at risk:

Total in EC 2L+	108	106	101	99	95	91	87	84	81	76	66	59	51	45	41	39	33	27	25	23	18	15	13	12	12	12	11	11	11	11	11	11	11	6	5	4	2	2	1	1	1	0
MSS/pMMR	94	92	87	85	82	78	75	73	71	67	57	52	45	40	36	34	29	23	21	19	16	13	11	10	10	10	9	9	9	9	9	9	9	5	4	3	1	1	0	0	0	0
MSI-H/dMMR	11	11	11	11	10	10	10	10	9	8	8	7	6	5	5	5	4	4	4	4	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	0

Makker, et al. J Clin Oncol 2020;38(26):2981-2992

Courtesy of Richard T Penson, MD, MRCP

ORR by Histologic Subtype



ORR in UPSC 21%

Makker, et al. J Clin Oncol 2020;38(26):2981-2992

Courtesy of Richard T Penson, MD, MRCP

Toxicity Promising antitumor activity with manageable toxicity

TABLE 3. Treatment-Related Adverse Events (≥ 20% any grade or any grade 3 or grade 4 events)

	Previously Treated EC[a] (n = 108)		All EC (N = 124)	
Preferred Term or Basket	**Any Grade**	**Grade 3/4**	**Any Grade**	**Grade 3/4**
Patients with any treatment-related TEAEs	105 (97.2)	75 (69.4)	120 (96.8)	83 (66.9)
Hypertension[b]	66 (61.1)	35 (32.4)	74 (59.7)	39 (31.5)
Diarrhea	57 (52.8)	7 (6.5)	65 (52.4)	8 (6.5)
Fatigue	56 (51.9)	9 (8.3)	59 (47.6)	9 (7.3)
Decreased appetite	51 (47.2)	0	59 (47.6)	0
Hypothyroidism[c]	48 (44.4)	1 (0.9)	54 (43.5)	1 (0.8)
Nausea	43 (39.8)	3 (2.8)	48 (38.7)	3 (2.4)
Stomatitis	36 (33.3)	0	39 (31.5)	0
Pain and arthralgia[d]	34 (31.5)	2 (1.9)	37 (29.8)	2 (1.6)
Dysphonia	30 (27.8)	0	34 (27.4)	0
PPE and severe skin reactions[e]	29 (26.9)	5 (4.6)	32 (25.8)	6 (4.8)
Vomiting	29 (26.9)	0	31 (25.0)	0
Weight decreased	28 (25.9)	2 (1.9)	30 (24.2)	2 (1.6)
Proteinuria[f]	24 (22.2)	4 (3.7)	30 (24.2)	4 (3.2)
Headache	22 (20.4)	0	25 (20.2)	0
Myalgia	19 (17.6)	1 (0.9)	20 (16.1)	1 (0.8)
Hepatotoxicity and hepatitis[g]	16 (14.8)	3 (2.8)	21 (16.9)	4 (3.2)

Makker, et al. J Clin Oncol 2020;38(26):2981-2992

Courtesy of Richard T Penson, MD, MRCP

Summary

Impact on Patient Care and Treatment Algorithms

- Established option and FDA approved for MSS EC
- Has rapidly become a new standard of care
- Given toxicity and QOL impact, tailoring dose is key

Implications for Future Research

- Phase III confirmatory trial awaited
- Microenvironment manipulation with IOs
- Relative merit of antiangiogenic > comb IO > PARPi UNK
- Benefit of bevacizumab vs. TKI unknown

Makker, et al. J Clin Oncol 2020;38(26):2981-2992

JAMA Oncology | Original Investigation

Clinical Activity and Safety of the Anti–Programmed Death 1 Monoclonal Antibody Dostarlimab for Patients With Recurrent or Advanced Mismatch Repair–Deficient Endometrial Cancer

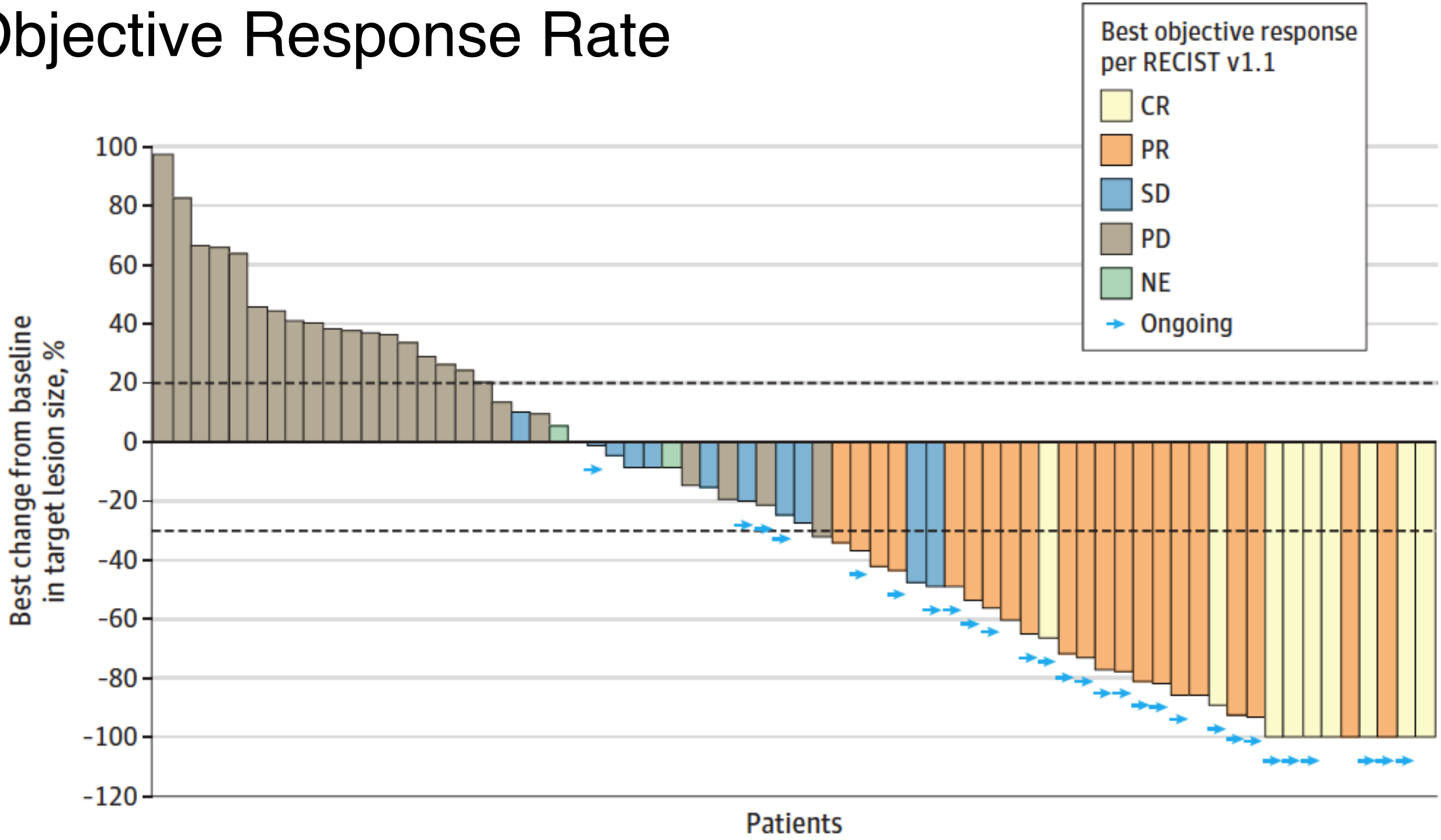
A Nonrandomized Phase 1 Clinical Trial

Ana Oaknin, MD, PhD; Anna V. Tinker, MD; Lucy Gilbert, MD; Vanessa Samouëlian, MD; Cara Mathews, MD; Jubilee Brown, MD; Maria-Pilar Barretina-Ginesta, MD; Victor Moreno, MD; Adriano Gravina, MD; Cyril Abdeddaim, MD; Susana Banerjee, MD; Wei Guo, PhD; Hadi Danaee, ScD; Ellie Im, MD; Renaud Sabatier, MD

JAMA Oncol 2020;6(11):1-7

Courtesy of Richard T Penson, MD, MRCP

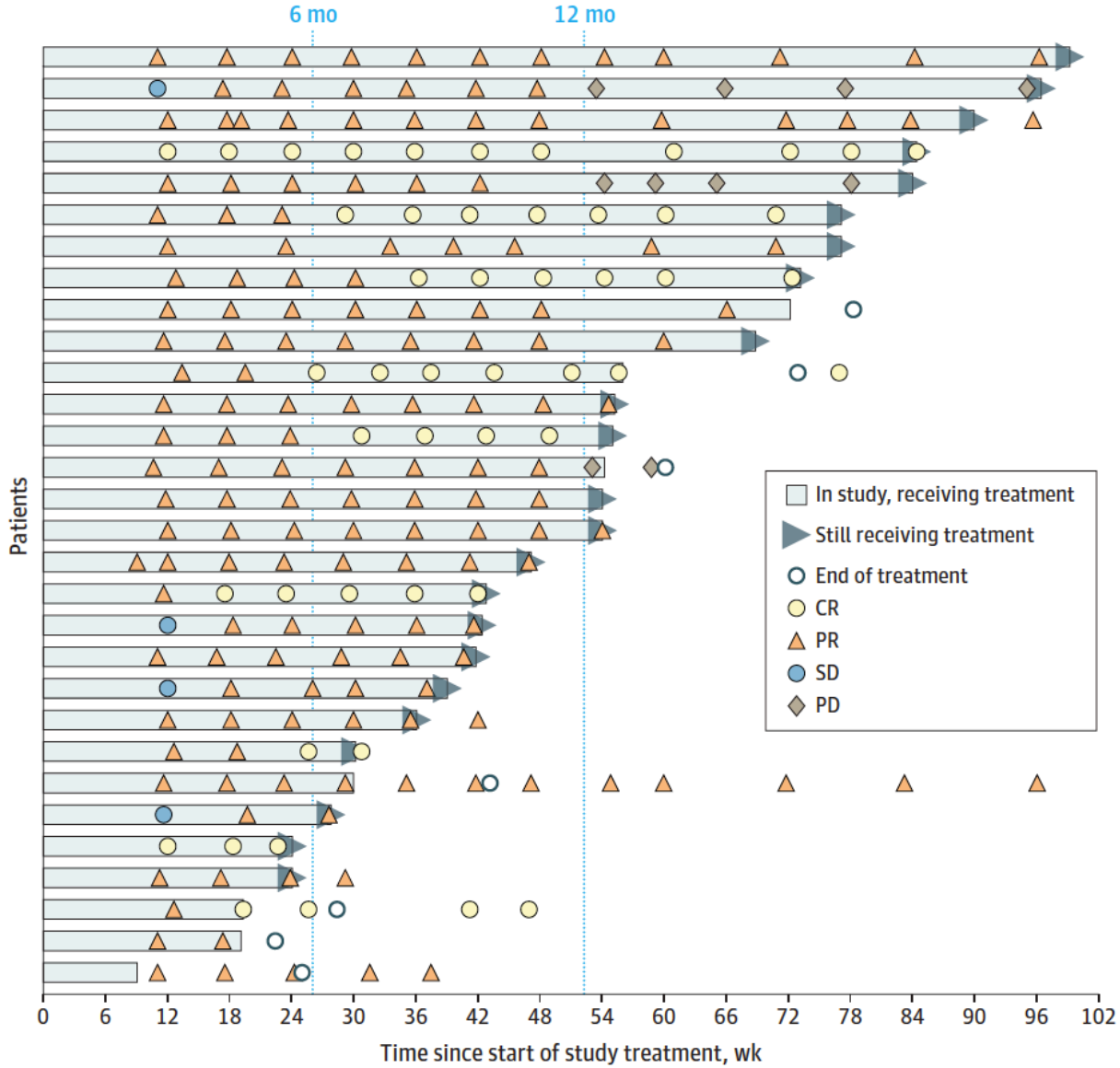
Objective Response Rate



Oaknin A, et al. JAMA Oncol 2020;6(11):1-7

Courtesy of Richard T Penson, MD, MRCP

Duration of Response



Oaknin A, et al. JAMA Oncol 2020;6(11):1-7

Courtesy of Richard T Penson, MD, MRCP

Summary

cORR 42%

cCR 13%

Gr 3 An (3%) & colitis (2%)

Clinically meaningful & durable antitumor activity

Acceptable safety profile

Impact on Patient Care and Treatment Algorithms

- Dostarlimab potent, high affinity PD-1 receptor blockade
- Typical and manageable PD-1 blockade toxicities

Implications for Future Research

- Speculation about accelerated approval based on Phase II experience has not yet materialized

Courtesy of Richard T Penson, MD, MRCP

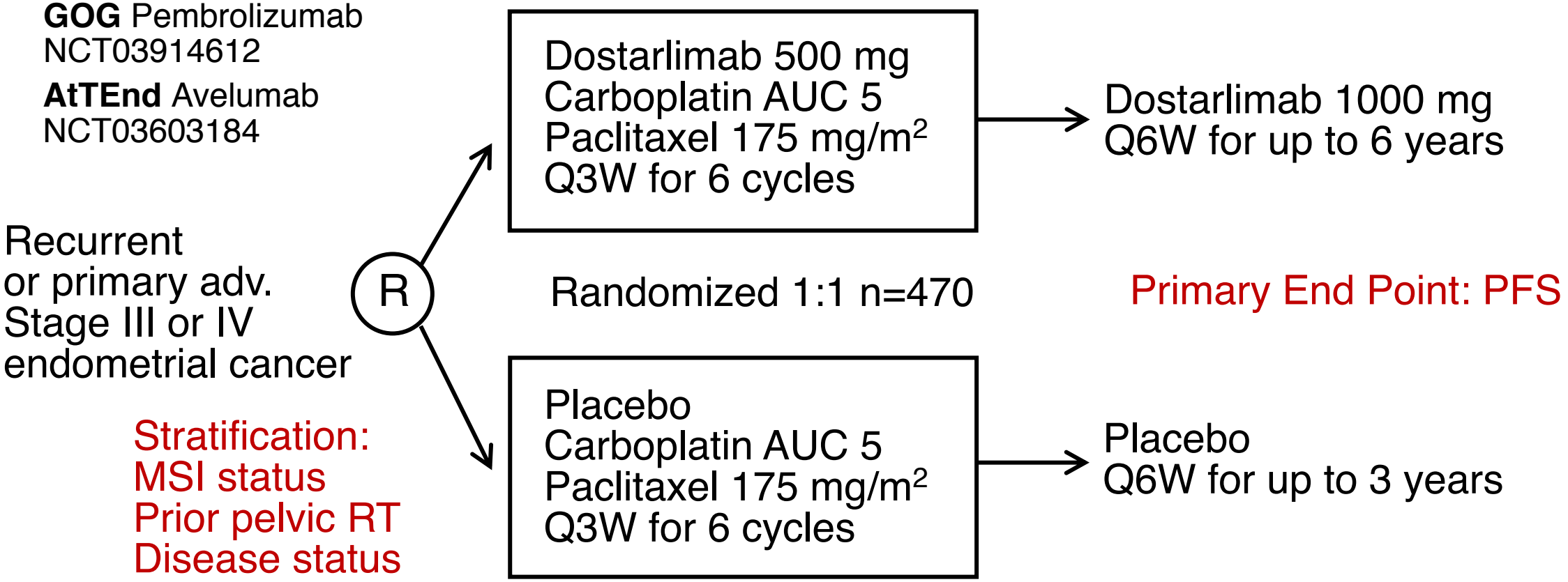
RUBY
CARESTONE CLINICAL TRIAL

NCT03981796

GOG Pembrolizumab
NCT03914612

AtTEnd Avelumab
NCT03603184

Mirza MR, et al. ENGOT-EN6/NSGO-RUBY
A Phase III, randomized, double-blind, multicenter study of dostarlimab + carbo-paclitaxel versus placebo + carbo-paclitaxel in recurrent or primary advanced EC. ASCO 2020;Abs TPS6107.



NSGO-CTU Nordic Society of Gynaecological Oncology - Clinical Trial Unit
ENGOT European Network of Gynaecological Oncological Trial groups
gsk do more feel better live longer
GOG FOUNDATION Transforming the standard of care

Courtesy of Richard T Penson, MD, MRCP

Mirza MR, et al. ENGOT-EN6/NSGO-RUBY
A Phase III, randomized, double-blind, multicenter study of dostarlimab + carbo-paclitaxel versus placebo + carbo-paclitaxel in recurrent or primary advanced EC. ASCO 2020;Abs TPS6107.

Summary

Impact on Patient Care and Treatment Algorithms

- Rapidly accruing registration trial

Implications for Future Research

- Will add niraparib in an upcoming amendment to investigate PARP IO benefit

Courtesy of Richard T Penson, MD, MRCP

original report

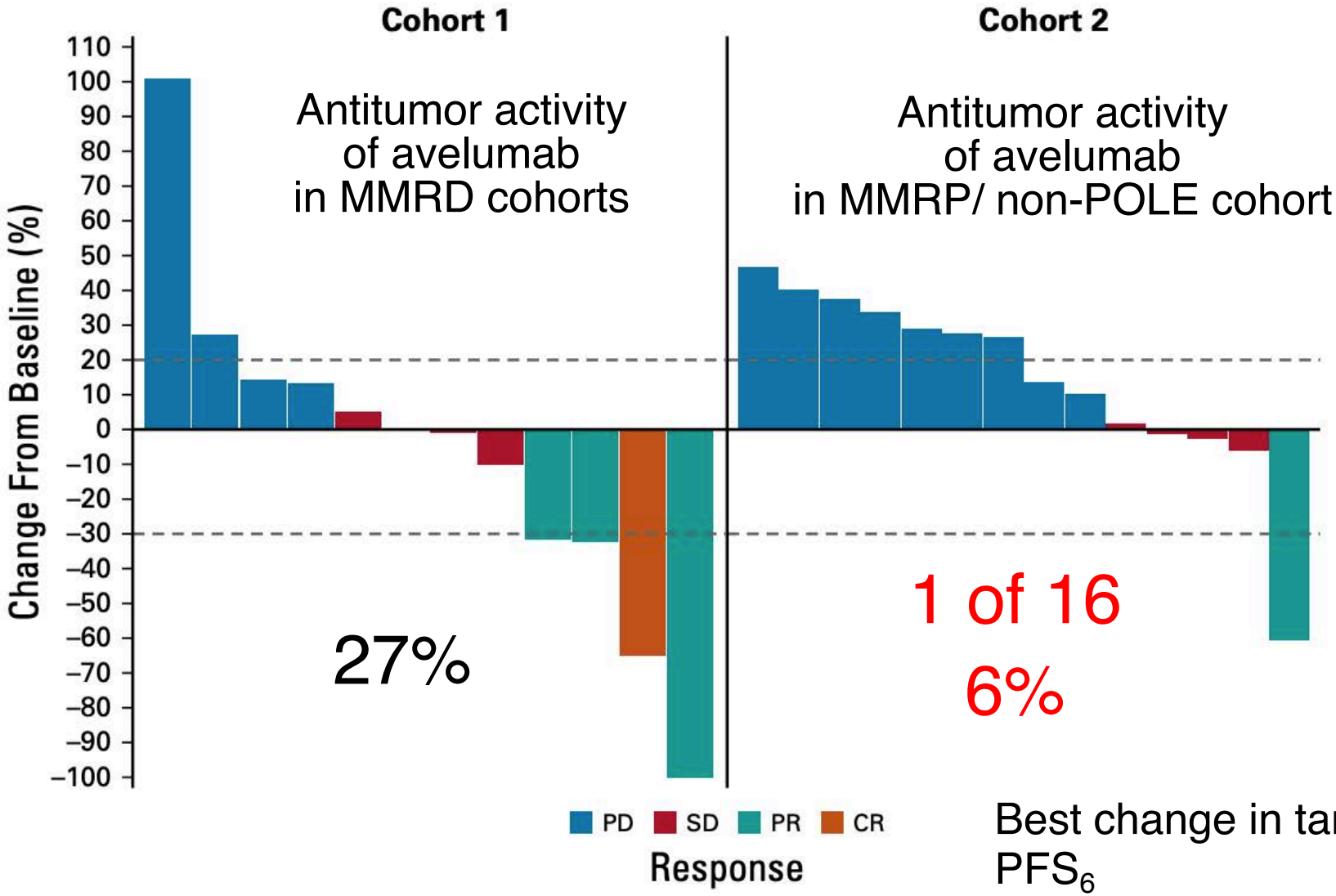
Phase II Study of Avelumab in Patients With Mismatch Repair Deficient and Mismatch Repair Proficient Recurrent/Persistent Endometrial Cancer

Panagiotis A. Konstantinopoulos, MD, PhD[1]; Weixiu Luo, MS[1]; Joyce F. Liu, MD[1]; Doga C. Gulhan, PhD[2]; Carolyn Krasner, MD[1]; Jeffrey J. Ishizuka, MD, DPhil[1]; Allison A. Gockley, MD[3]; Mary Buss, MD, MPH[4]; Whitfield B. Growdon, MD[5]; Heather Crowe[5]; Susana Campos, MD, MPH[1]; Neal I. Lindeman, MD[3]; Sarah Hill, MD, PhD[3]; Elizabeth Stover, MD, PhD[1]; Susan Schumer, MD[1]; Alexi A. Wright, MD, MPH[1]; Jennifer Curtis, MS[1]; Roxanne Quinn[1]; Christin Whalen, RN[1]; Kathryn P. Gray, PhD[1]; Richard T. Penson, MD[5]; Stephen A. Cannistra, MD[4]; Gini F. Fleming, MD[6]; and Ursula A. Matulonis, MD[1]

J Clin Oncol 2019;37(30):2786-94

Courtesy of Richard T Penson, MD, MRCP

Objective Response Rate



Best change in target lesions

PFS_6

Konstantinopoulos PA, et al. J Clin Oncol 2019;37(30):2786-94

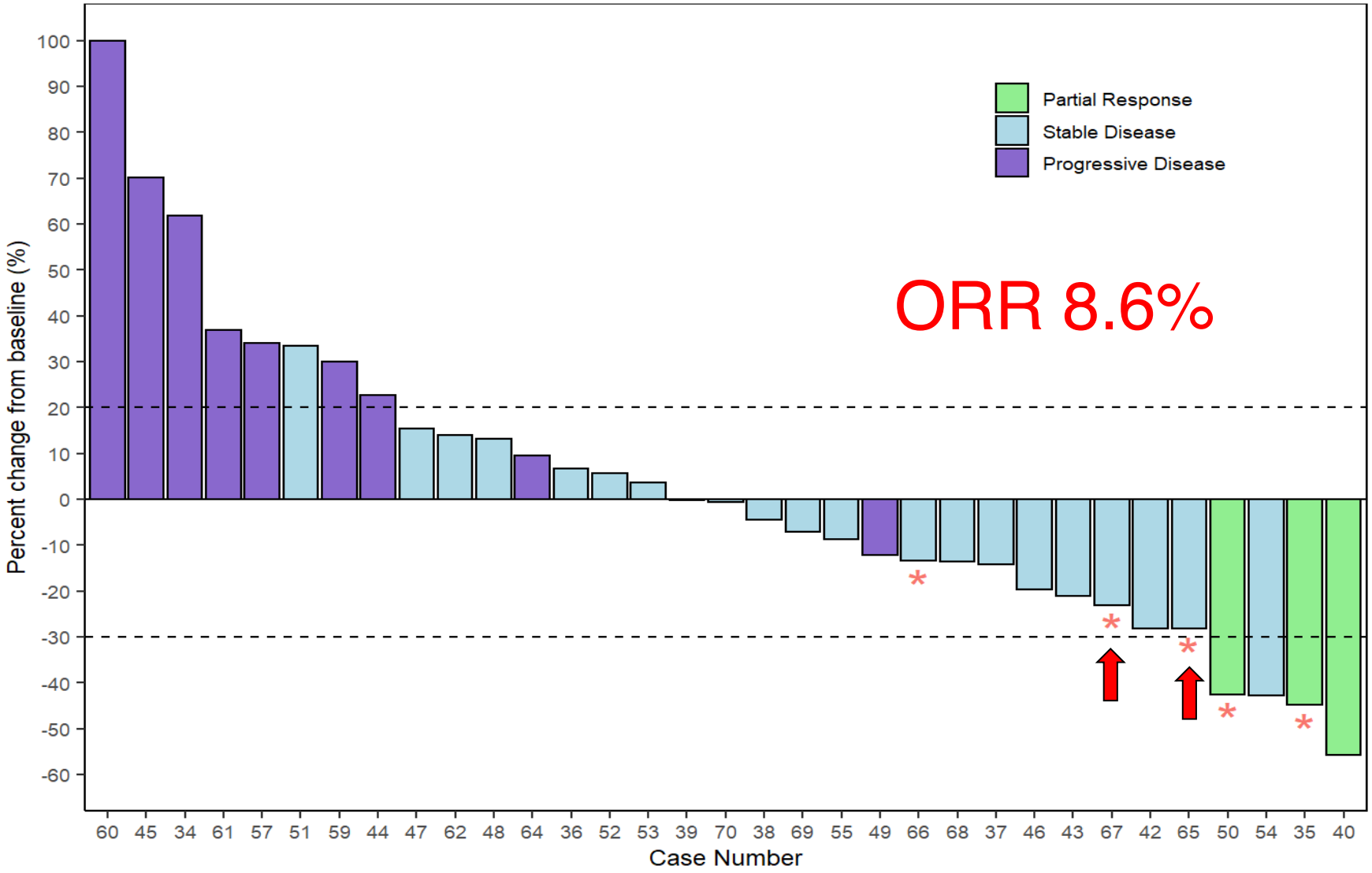
Courtesy of Richard T Penson, MD, MRCP

Konstantinopoulos PA, et al.
Phase II study of PARP inhibitor talazoparib and PD-L1 inhibitor avelumab in patients with microsatellite stable recurrent / persistent endometrial cancer
Annals Oncol 2020;31(4):S1165 LBA35

ESMO
GOOD SCIENCE
BETTER MEDICINE
BEST PRACTICE

Courtesy of Richard T Penson, MD, MRCP

Objective Response Rate



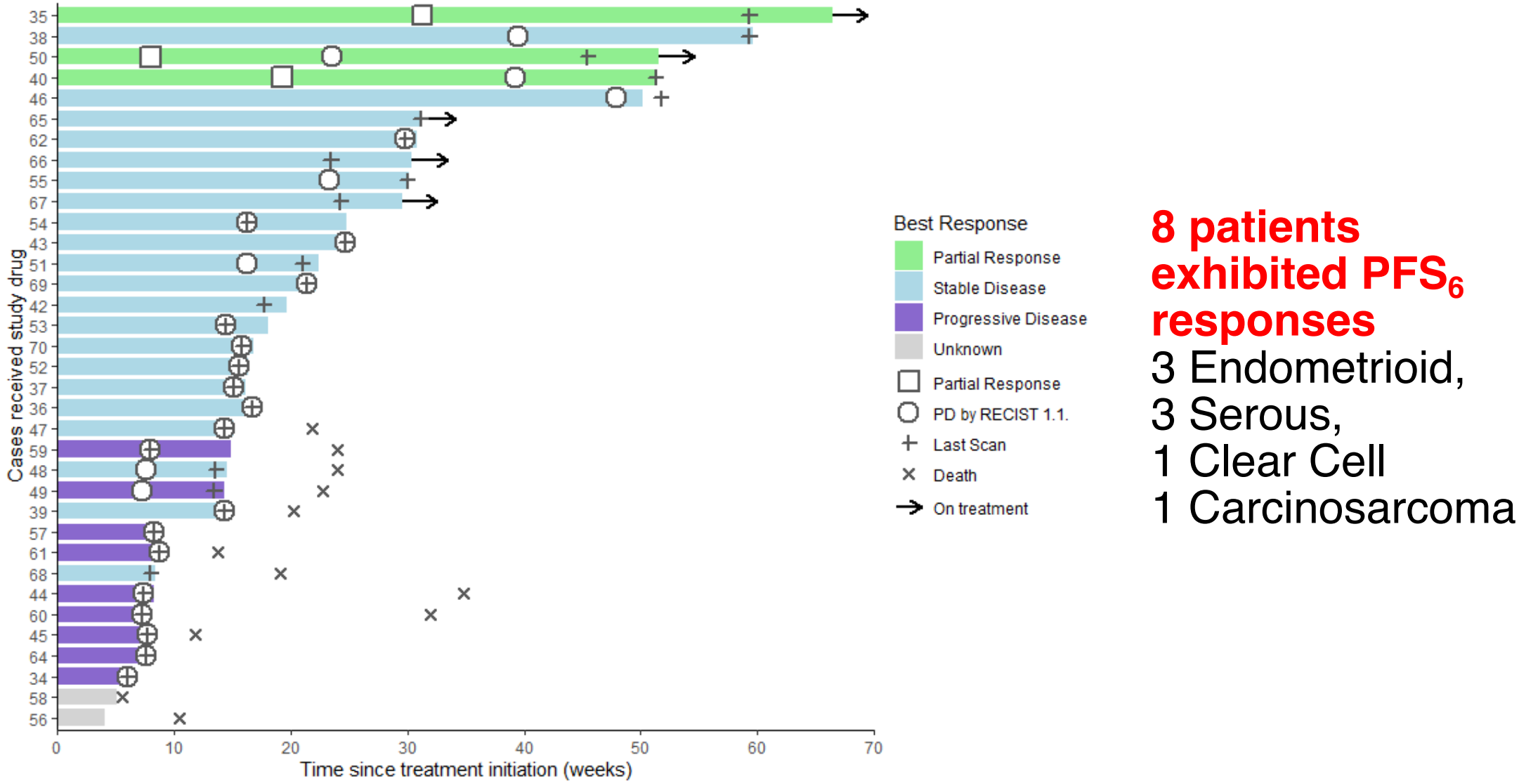
5 patients still on treatment (*)

2 patients still on Rx (red arrows) with near PR (23%, 28% reduction)

Konstantinopoulos PA, et al. Annals Oncol 2020;31(4):S1165 LBA35

Courtesy of Richard T Penson, MD, MRCP

Duration of Response



8 patients exhibited PFS_6 responses

3 Endometrioid,
3 Serous,
1 Clear Cell
1 Carcinosarcoma

Konstantinopoulos PA, et al. Annals Oncol 2020;31(4):S1165 LBA35

Courtesy of Richard T Penson, MD, MRCP

Objective Response Rate

VIRTUAL 2020 ESMO congress

G3+ TREATMENT RELATED TOXICITY

		Grade 3		Grade 4	
Category	Adverse Events	N	%	N	%
Blood and lymphatic system disorders	Anemia	16	45.7	-	-
Investigations	Platelet count decreased	7	20	3	8.6
Investigations	Neutrophil count decreased	4	11.4	-	-
General disorders and admin site conditions	Fatigue	3	8.6	-	-
Blood and lymphatic system disorders	Blood and lymphatic system disorders - Other, specify	1	2.9	-	-
General disorders and admin site conditions	Infusion related reaction	1	2.9	-	-
Renal and urinary disorders	Acute kidney injury	1	2.9	-	-
Renal and urinary disorders	Hematuria	1	2.9	-	-

Konstantinopoulos PA, et al. Annals Oncol 2020;31(4):S1165 LBA35

Courtesy of Richard T Penson, MD, MRCP

Summary

Impact on Patient Care and Treatment Algorithms

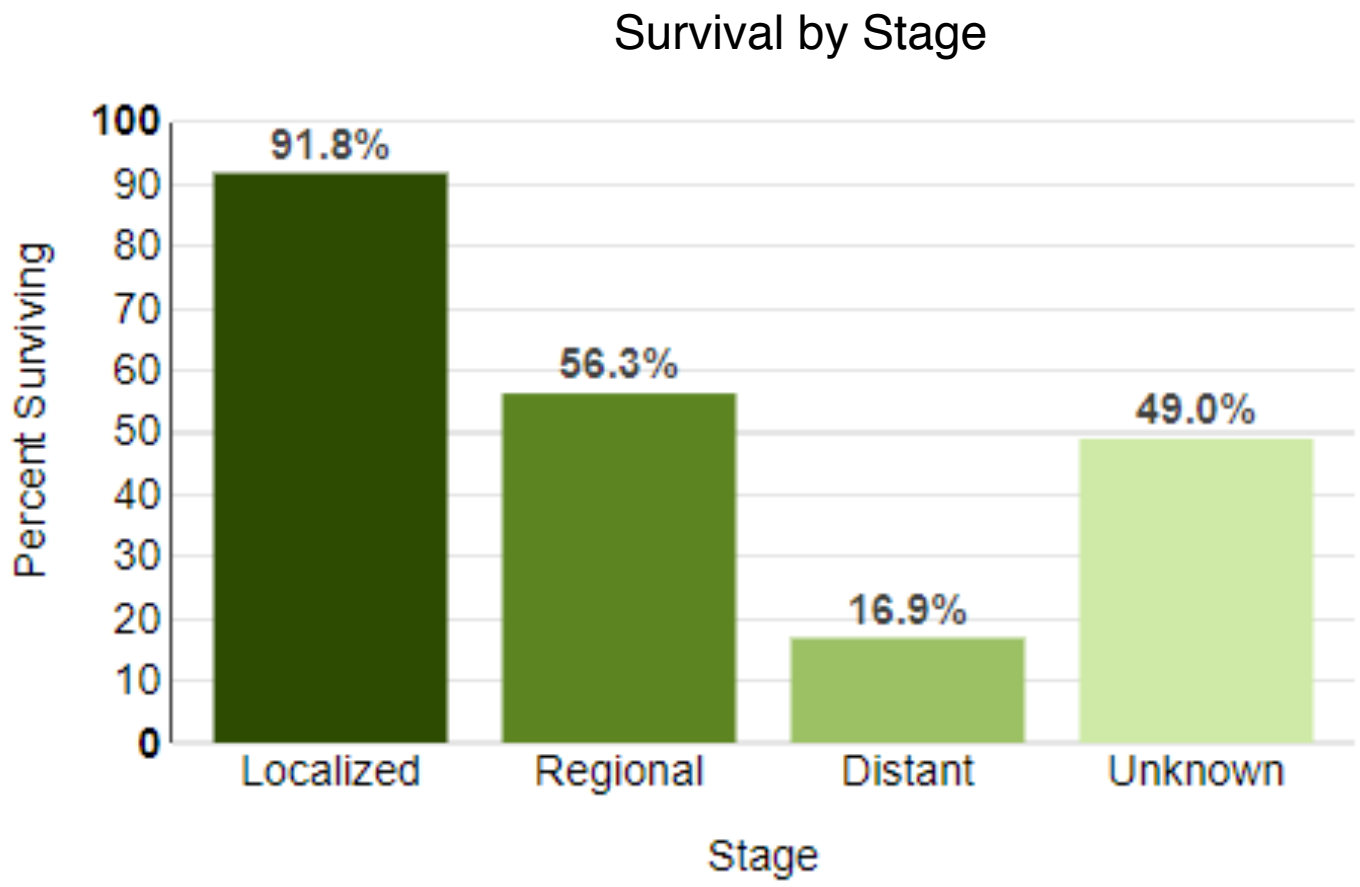
- Notable demonstration of the differences in response to IO between MSI-H and MSS EC
- Augmentation of efficacy and toxicity

Implications for Future Research

- Relative benefit of PD-1 vs. PD-L1 unknown but in X-trial comparisons PD-L1 seems less effective

Konstantinopoulos PA, et al. Annals Oncol 2020;31(4):S1165 LBA35

Cervical Cancer: Challenges at a Glance



Courtesy: Amir Jazaeri MD - MD Anderson Cancer Center

Courtesy of Richard T Penson, MD, MRCP

original report

Efficacy and Safety of Pembrolizumab in Previously Treated Advanced Cervical Cancer: Results From the Phase II KEYNOTE-158 Study

Hyun Cheol Chung, MD, PhD[1]; Willeke Ros, MSc[2]; Jean-Pierre Delord, MD, PhD[3]; Ruth Perets, MD, PhD[4]; Antoine Italiano, MD, PhD[5]; Ronnie Shapira-Frommer, MD[6]; Lyudmila Manzuk, MD[7]; Sarina A. Piha-Paul, MD[8]; Lei Xu, PhD[9]; Susan Zeigenfuss, RN[9]; Scott K. Pruitt, MD, PhD[9]; and Alexandra Leary, MD, PhD[10]

J Clin Oncol 2019;37(17):1470-8

Courtesy of Richard T Penson, MD, MRCP

Objective Response Rate

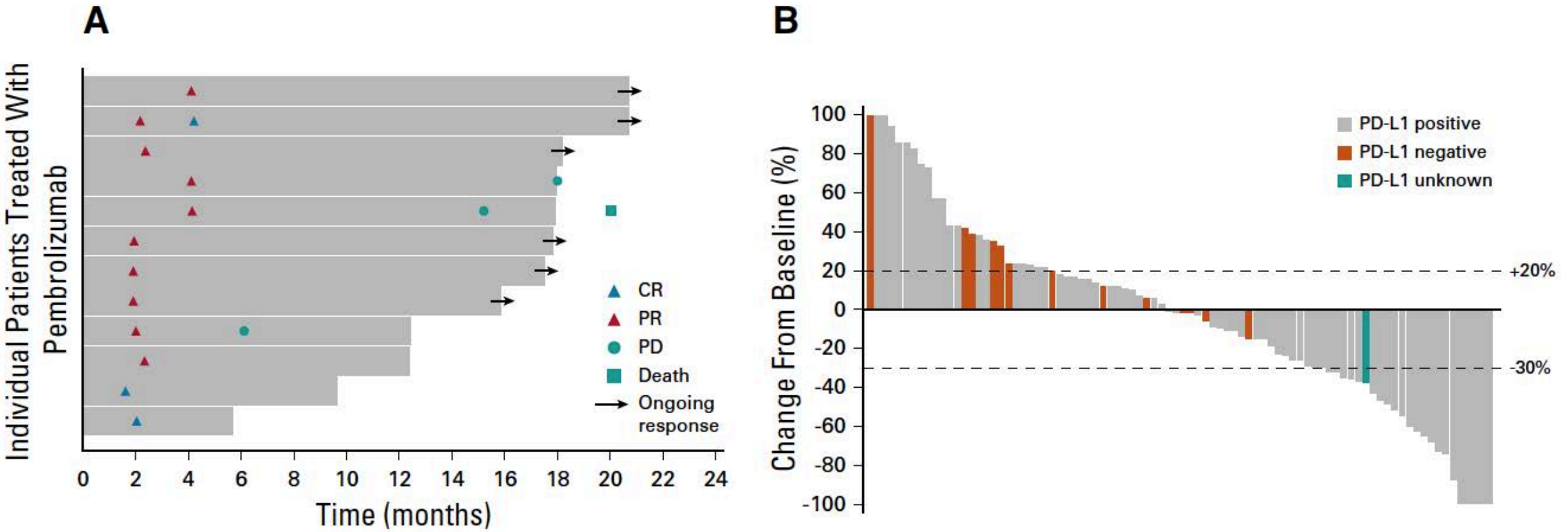
12%

Antitumor Activity	Total Population (N = 98)*	Total (n = 82)	Previously Treated (n = 77)†	PD-L1–Negative Population (n = 15)
ORR	12 (12.2)	12 (14.6)	11 (14.3)	0 (0.0)
95% CI	6.5 to 20.4	7.8 to 24.2	7.4 to 24.1	0.0 to 21.8
DCR	30 (30.6)	27 (32.9)	24 (31.2)	3 (20.0)
95% CI	21.7 to 40.7	22.9 to 44.2	21.2 to 42.7	4.3 to 48.1
Best overall response				
CR	3 (3.1)	3 (3.7)	2 (2.6)	0 (0.0)
PR	9 (9.2)	9 (11.0)	9 (11.7)	0 (0.0)
SD	18 (18.4)	15 (18.3)	13 (16.9)	3 (20.0)
Progressive disease	55 (56.1)	44 (53.7)	42 (54.5)	10 (66.7)
Not able to be evaluated‡	5 (5.1)	4 (4.9)	4 (5.2)	1 (6.7)
Not able to be assessed§	8 (8.2)	7 (8.5)	7 (9.1)	1 (6.7)
Time to response, months‖				—
Median	2.1	2.1	2.2	
Range	1.6-4.1	1.6-4.1	1.6-4.1	
Duration of response, months‖¶				—
Median	NR	NR	NR	
Range	≥ 3.7 to ≥ 18.6	≥ 3.7 to ≥ 18.6	4.1 to ≥ 18.6	
Estimated rate of response duration, months‖¶				—
≥ 6	10 (90.9)	10 (90.9)	10 (90.9)	
≥ 9	9 (90.9)	9 (90.9)	9 (90.9)	
≥ 12	7 (79.5)	7 (79.5)	7 (79.5)	

Chung HC, et al. J Clin Oncol 2019;37(17):1470-8

Courtesy of Richard T Penson, MD, MRCP

Duration of Response



Chung HC, et al. J Clin Oncol 2019;37(17):1470-8

Courtesy of Richard T Penson, MD, MRCP

Summary

Impact on Patient Care and Treatment Algorithms

- FDA approved for PD-L1 +ve cervical cancer
- Exciting new standard of care

Implications for Future Research

- Benefits limited to PD-L1 +ve cervical cancer
- Potential benefit to checkpoint blockage and cellular therapy

Chung HC, et al. J Clin Oncol 2019;37(17):1470-8

CLINICAL CANCER RESEARCH | CLINICAL TRIALS: TARGETED THERAPY

Tisotumab Vedotin in Previously Treated Recurrent or Metastatic Cervical Cancer

David S. Hong[1], Nicole Concin[2], Ignace Vergote[2], Johann S. de Bono[3], Brian M. Slomovitz[4], Yvette Drew[5], Hendrik-Tobias Arkenau[6], Jean-Pascal Machiels[7], James F. Spicer[8], Robert Jones[9], Martin D. Forster[10], Nathalie Cornez[11], Christine Gennigens[12], Melissa L. Johnson[13], Fiona C. Thistlethwaite[14], Reshma A. Rangwala[15], Srinivas Ghatta[16], Kristian Windfeld[17], Jeffrey R. Harris[18], Ulrik Niels Lassen[19], and Robert L. Coleman[20]

Clin Cancer Res 2020;26:1220–8

Courtesy of Richard T Penson, MD, MRCP

Toxicity

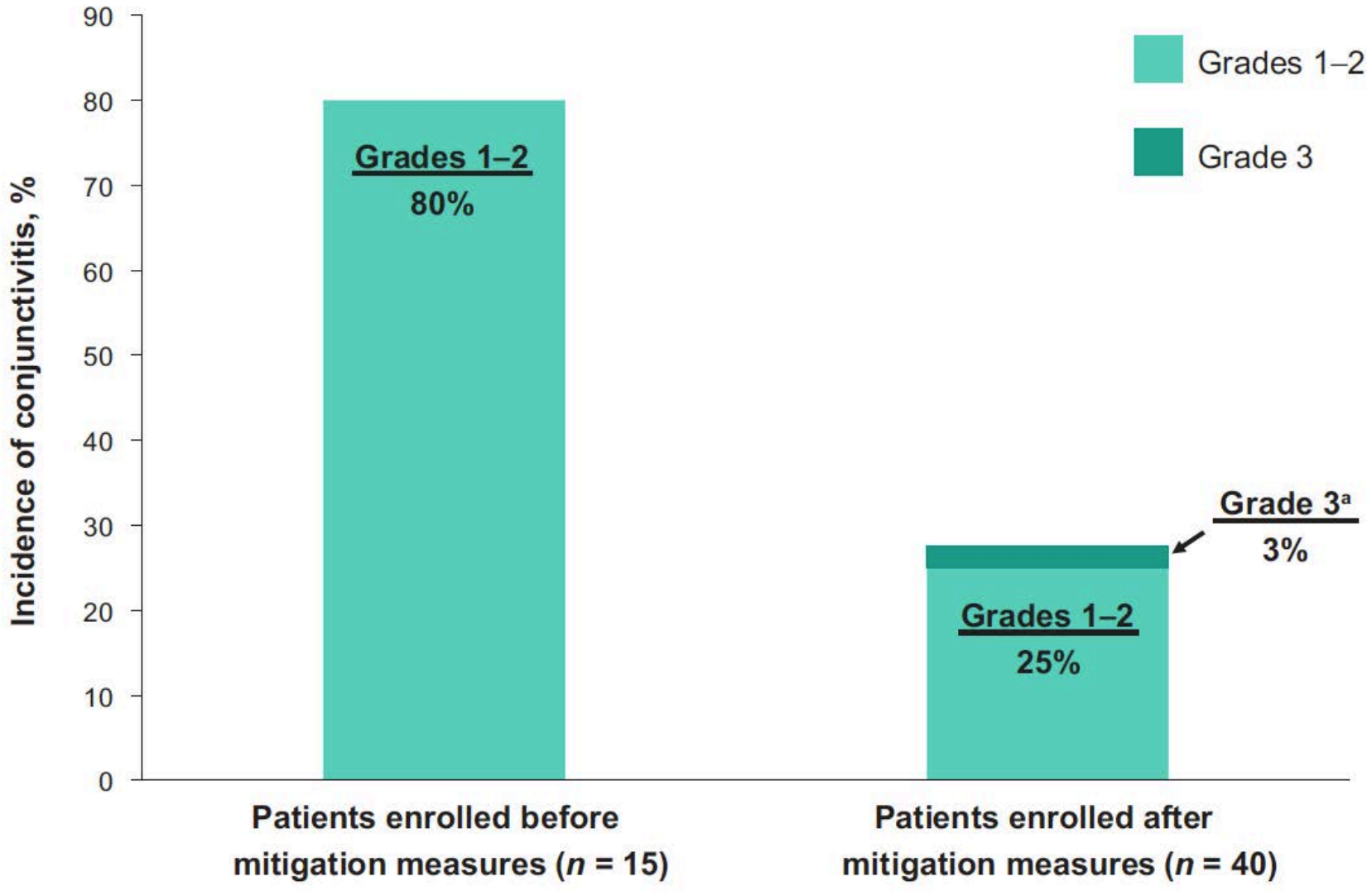
Table 2. Treatment-emergent AEs.

	Cervical cancer cohort $N = 55$	
Incidence, *n* (%)	**All grade**	**Grade ≥3**
Patients with ≥1 AE	55 (100)	31 (56)
AEs with ≥20% incidence		
Epistaxis	28 (51)	0
Fatigue	28 (51)	5 (9)
Nausea	27 (49)	3 (5)
Conjunctivitis	23 (42)	1 (2)
Alopecia	22 (40)	0
Decreased appetite	21 (38)	0
Constipation	20 (36)	1 (2)
Peripheral neuropathy	20 (36)	2 (4)
Vomiting	19 (35)	4 (7)
Diarrhea	16 (29)	1 (2)
Abdominal pain	15 (27)	3 (5)
Anemia	13 (24)	6 (11)
Dry eye	13 (24)	0
Hypokalemia	11 (20)	3 (5)
Pruritus	11 (20)	0
Pyrexia	11 (20)	1 (2)
Urinary tract infection	11 (20)	1 (2)

Hong DS, et al. Clin Cancer Res 2020;26:1220–8

Courtesy of Richard T Penson, MD, MRCP

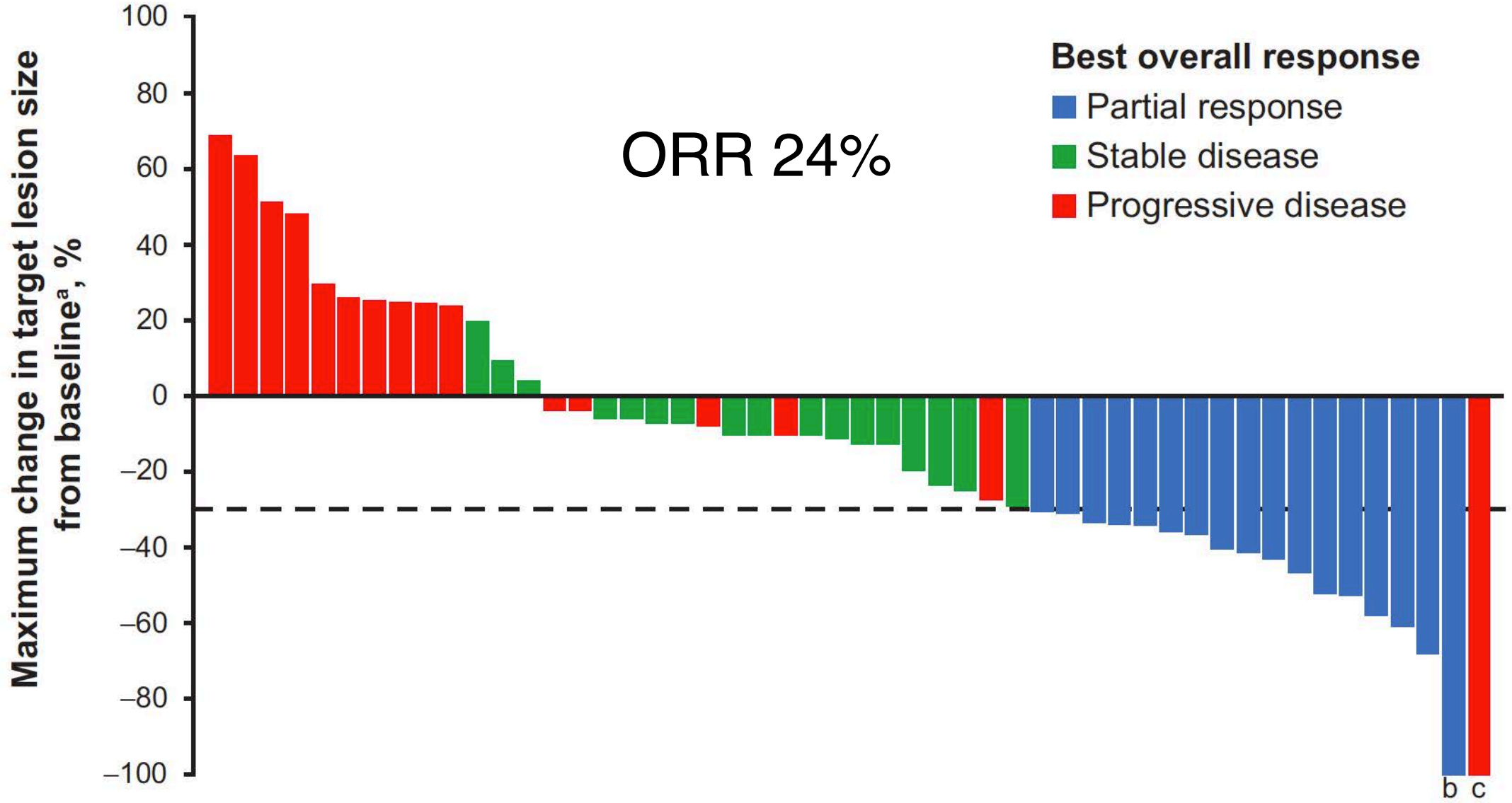
Toxicity



Hong DS, et al. Clin Cancer Res 2020;26:1220–8

Courtesy of Richard T Penson, MD, MRCP

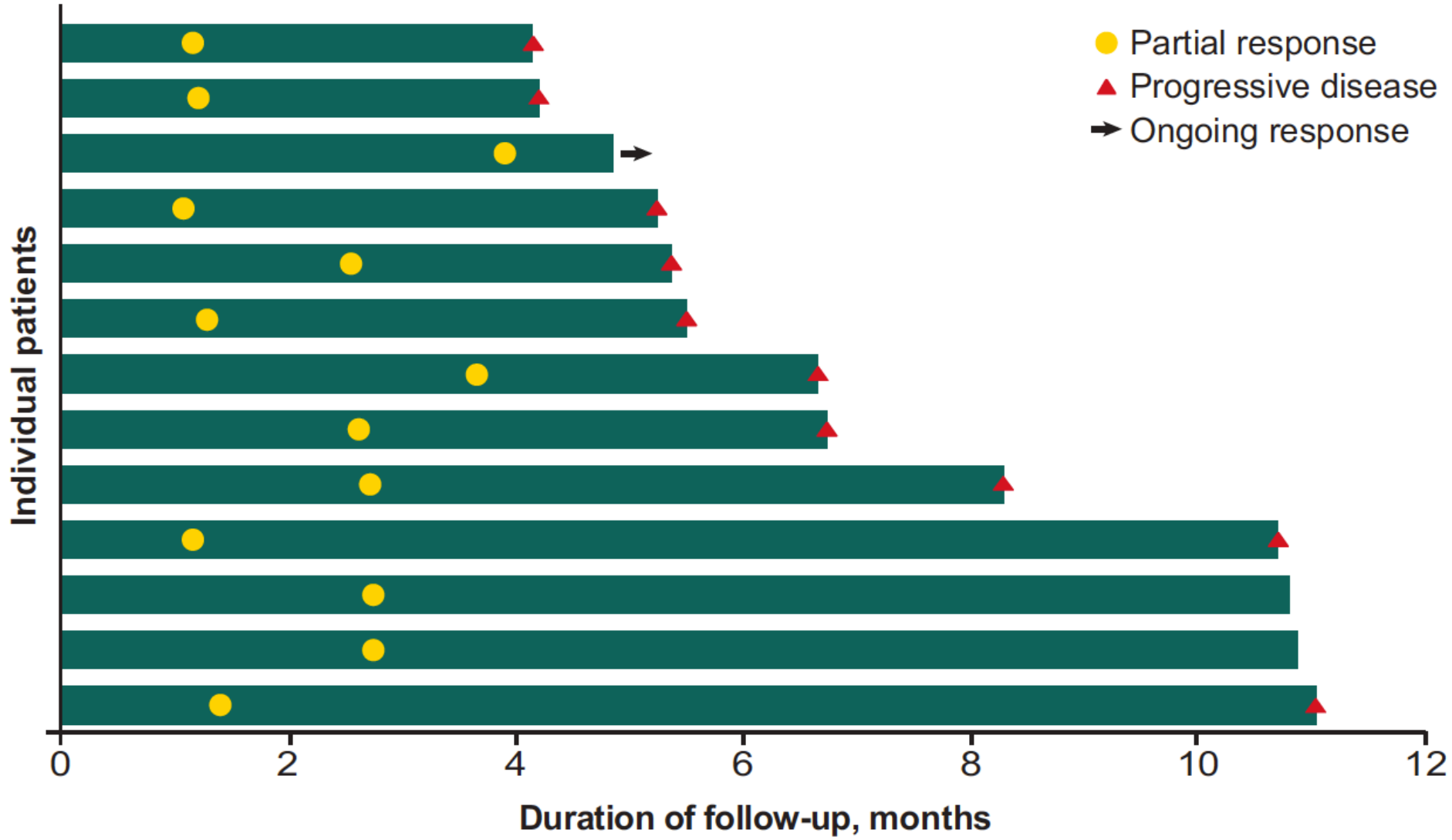
Objective Response Rate



Hong DS, et al. Clin Cancer Res 2020;26:1220–8

Courtesy of Richard T Penson, MD, MRCP

Duration of Response



Hong DS, et al. Clin Cancer Res 2020;26:1220–8

Courtesy of Richard T Penson, MD, MRCP

Summary

Impact on Patient Care and Treatment Algorithms

- Exciting new ADC with demonstrated clinical benefit

Implications for Future Research

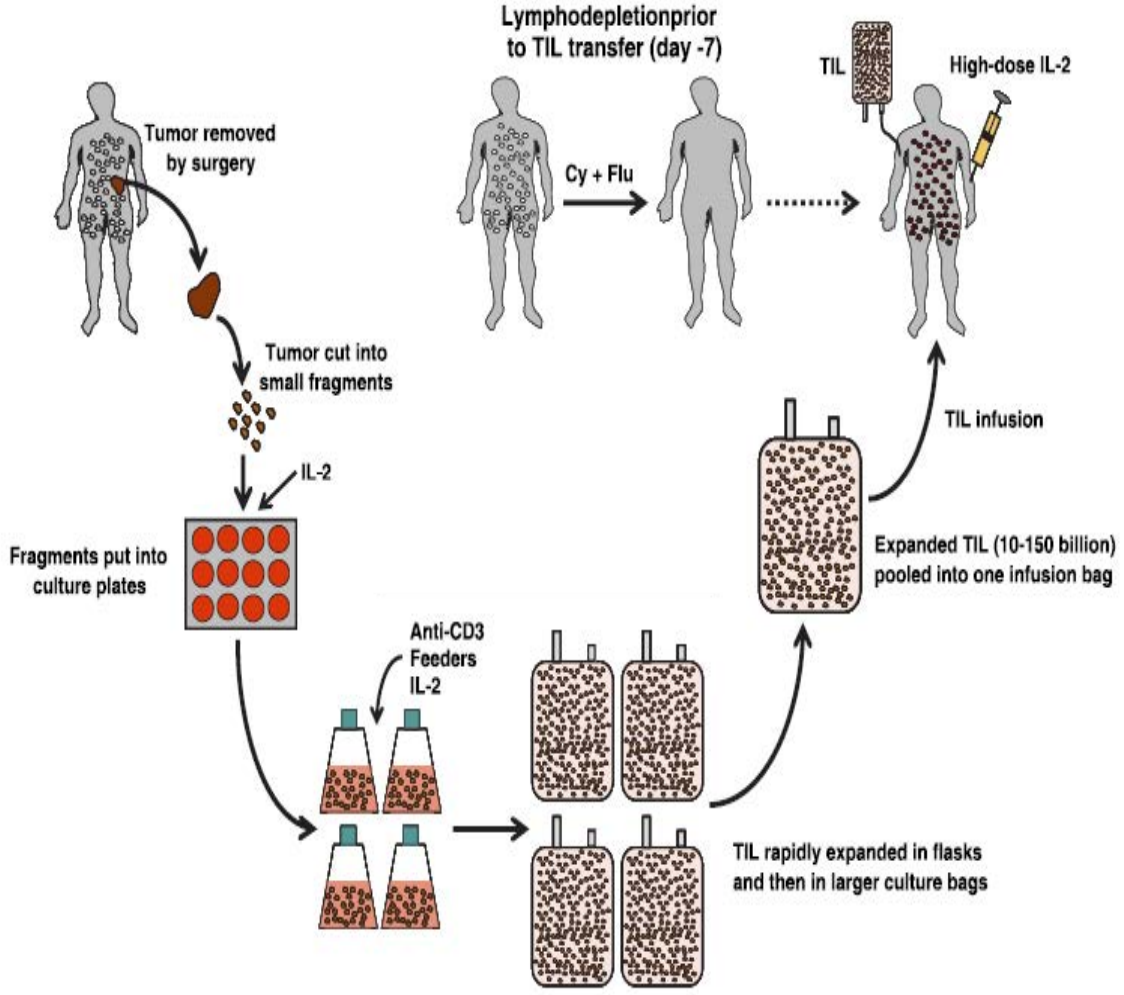
- Accelerated FDA approval and breakthrough designation have sped up the path from bench to bedside
- Many ADCs in development

Hong DS, et al. Clin Cancer Res 2020;26:1220–8

Courtesy of Richard T Penson, MD, MRCP

Emerging Therapies

Adoptive Cell Therapy - TIL



Wu R, et al. Cancer J. 2012;18:160-175

LN-145 Jazaeri A, et al. ASCO 2019 Abs 2538
Phase 2 multicenter study to evaluate the efficacy and safety of autologous Tumor Infiltrating Lymphocytes (LN-145) in patients with recurrent, metastatic or persistent cervical carcinoma
CR = 11% (3 of 27)
PR = 33% (9 of 27)

Huh WK, et al. ASCO 2016 Abs 5516
Axalimogene Filolisbac (ADXS11-001)
Listeria monocytogenes Based Vaccine
Lm-listeriolysin-O fuses to HPV E7
Phase 2 GOG/NRG0265 study

Courtesy of Richard T Penson, MD, MRCP