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Supplemental Table 1: Baseline characteristics of patients receiving immune checkpoint inhibitor therapy grouped by duration of AKI

	No AKI	Sustained AKI	Transient AKI
	Mean ± SD or N (%)		
Number of patients	847	82	87
Age (years)	63 ± 14	63 ± 12	64 ± 11
Baseline Creatinine (mg/dL)	0.9 ± 0.4	0.9 ± 0.3	0.9 ± 0.3
eGFR (mL/min)	82 ± 22	85 ± 20	82 ± 20
Male	513 (61)	50 (61)	53 (61)
Female	334 (39)	32 (39)	34 (39)
Race			
White	766 (90)	76 (93)	78 (90)
Black	15 (2)	0	4 (5)
Hispanic	11 (1)	3 (4)	2 (2)
Asian	23 (3)	2 (2)	2 (2)
Other/unknown	32 (4)	1 (1)	1 (1)
Cirrhosis	12 (1)	2 (2)	3 (3)
Hypertension*	416 (49)	50 (61)*	47 (54)
Diabetes	143 (17)	15 (18)	13 (15)
Drugs			
NSAIDs	297 (35)	26 (32)	35 (40)
Allopurinol	61 (7)	6 (7)	7 (8)
PPI*	488 (58)	58 (71)*	61 (70)
H2 blockers	331 (39)	29 (35)	36 (41)
ACE/ARB	325 (38)	39 (48)	39 (45)
Baseline kidney function (eGFR group)			
< 60 mL/min per 1.73 m2	149 (17)	10 (12)	10 (11)
60 - 90 mL/min per 1.73 m2	361 (43)	35 (43)	45 (52)
>= 90 mL/min per 1.73 m2	337 (40)	37 (45)	32 (37)
Immune checkpoint inhibitor Class			
PD1 agents	592 (70)	51 (62)	58 (67)
CTLA4 agents	206 (24)	26 (32)	17 (19)
PDL1 agents	29 (3)	3 (4)	5 (6)
Combined therapy	20 (3)	2 (2)	7 (8)

Prior exposure to nephrotoxic chemotherapy*	240 (28)	33 (40)	36 (41)
Malignancy			
Melanoma	363 (43)	42 (51)	33 (38)
Lung	269 (32)	17 (21)	24 (28)
Head and Neck	46 (5)	5 (6)	7 (8)
Luminal	28 (3)	4 (5)	6 (7)
Liquid	30 (4)	3 (4)	3 (3)
Glioblastoma multiforme	24 (3)	3 (4)	2 (2)
Hepatobiliary	17 (2)	4 (5)	2 (2)
Renal Cell Carcinoma	19 (2)	3 (3)	4 (5)
Other	51 (6)	1 (1)	6 (7)

Legend: The baseline characteristics for patients in a cohort are shown as a % of that particular cohort. *In univariable models comparing demographic and clinical characteristics of patients in these three cohorts, baseline proton pump inhibitor exposure ($p<0.01$) and nephrotoxic chemotherapy exposure ($p<0.01$) were significant. Nephrotoxic chemotherapies included carboplatin, cisplatin, oxaliplatin, gemcitabine, capecitabine, cyclophosphamide, methotrexate, topotecan, irinotecan, vemurafenib and bortezomib.

Abbreviations: AKI = acute kidney injury, eGFR = estimated glomerular filtration rate, PD1 = Programmed cell death protein 1, CTLA4 = cytotoxic T-lymphocyte associated antigen 4, PDL1 = programmed death ligand 1, Combined = ipilimumab (CTLA4) and nivolumab (PD1).

Supplemental Table 2: Incidence and types of concurrent immune related adverse events in patients with potential immune checkpoint inhibitor-related acute kidney injury

Concurrent irAEs with 30 patients with ICPI-AKI	Count (%)
Any other irAE	26 (87%)
More than 1 other irAEs	13 (43%)
Organs affected in the concurrent irAE: N (%)	
Thyroiditis	13 (43%)
Colitis	7 (23%)
Rash	6 (20%)
Hepatitis	5 (17%)
Pneumonitis	4 (13%)
Hypophysitis	3 (10%)
Adrenal insufficiency	3 (10%)
Pancreatitis	2 (7%)
Uveitis	1 (3%)
Myositis	1 (3%)

Legend. ‘Concurrent irAE’ is defined as a recognized irAE affecting an organ other than the kidney at the same time as the ICPI-AKI event occurred.

Abbreviations: ICPI-AKI = immune checkpoint inhibitor related acute kidney injury, irAE = immune related adverse event

Supplemental Table 3: De-identified case summaries of patients with 'potential immune checkpoint inhibitor related AKI'.

ID	Demographics	BL SCr (mg/dL)	AKI stage	UA	Concurrent irAE	PPI/ NSAIDs at baseline	PPI/ NSAIDs At AKI onset	Summary
1	75 yo WF	0.98	1	ND	Colitis	-/-	-/-	AKI in the context of hepatitis, colonoscopy-diagnosed autoimmune colitis and given IV steroids, then prednisone 60mg/d tapered over 6 weeks with improvement in diarrhea, LFT abnormalities, and creatinine to 1.2mg/dL.
2	75 yo WF	1.01	1	ND	Thyroiditis	+/+	+/+	Asymptomatic rise in SCr in the context of ICPI-induced hyperthyroidism without other hemodynamic alterations, creatinine remained elevated above baseline (1.2-1.5 range), ICPI continued until lung CA progressed.
3	70 yo WM	0.72	2	0 prot 0-2 rbc 20-50 wbc	Thyroiditis, Hypophysitis	+/+	+/-	AKI and leukocyturia in the context of hypophysitis, SCr did not normalize with IV fluids. Did not receive steroids, despite creatinine remaining elevated. Re-challenged with ICPI with rapid progression of CA and transition to hospice
4	85 yo WM	1.04	2	0 prot 0-2 rbc 10-20 wbc	Hepatitis	+/-	+/-	Presented with fever, hepatitis, and AKI. Given methylprednisolone and prednisone for 10 days. Re-challenged with ICPI 1mo later and AKI recurred, given prednisone 60mg/d with resolution of AKI to new baseline of 1.3mgdL
5	75 yo WM	0.79	2	ND	Thyroiditis, Myositis	+/-	+/-	AKI in the context of hypothyroidism and myositis. ICPI held for 2mo and SCr improved to 1.2mg/dL. Re-challenged with ICPI and had a second episode of AKI, treated with prednisone 40mg daily and SCr improved to 1.2mg/dL.
6	60 yo WF	0.46	1	ND	Thyroiditis, Rash	+/-	-/-	AKI co-existing with hypothyroidism and rash attributed to ICPI. SCr did not return to prior baseline until ICPI discontinued.
7	70 yo WM	1.94	2	0 prot 0-2 rbc 10-20 wbc	Colitis	+/+	+/+	Rise in SCr to 5.3mg/dL after two doses of ICPI with new diagnosis of colitis, no improvement with IVF. Began prednisone 60mg/d, with resolution of AKI, however refractory colitis required infliximab. Re-challenged 4mo later with ICPI but cancer quickly progressed
8	75 yo WM	0.78	1	0 prot 0-2 rbc 3-5 wbc	Pneumonitis	+/+	+/-	AKI in the context of ICPI-induced pneumonitis, SCr did not improve with hydration, but improved with prednisone 60mg/d to near baseline.
9	60 yo WM	0.86	1	0 prot, 0-2 rbc 0-2 wbc	Thyroiditis	+/-	+/-	Unexplained rise in SCr, concurrently diagnosed with thyroiditis, patient continued ICPI treatment and SCr remained elevated 1.3-1.5mg/dL over the next 6 months
10	70 yo HF	1.26	2	Tr prot 50-100 rbc 50-100 wbc	None	+/+	+/+	AKI in the context of progressive metastatic cancer causing hyperbilitrubinemia and AKI, treated with steroids, also had a unilateral obstruction that was relieved, patient was re-challenged with ICPI and developed worsening AKI and was transferred to hospice.
11	50 yo WM	0.87	1	0 prot, 0-2 rbc 3-5 wbc	Thyroiditis, adrenal insufficiency	+/-	+/-	Unexplained AKI, given prednisone 60mg/d tapered over 6 weeks, SCr improved. Re-challenged with ICPI while still on low dose prednisone, developed pneumonitis, SCr remained elevated 1.3-1.5 range. Improved to 1mg/dL after stopping ICPI altogether
12	65 yo WM	0.98	3	1 prot >100 rbc >100 wbc	None	-/-	-/-	Unexplained AKI, started dialysis, given methylprednisolone for presumed ICPI-nephritis. Patient transitioned to hospice given lack of improvement.
13	60 yo WF	0.93	2	1 prot 0-2 rbc 3-5 wbc	Pneumonitis	+/-	-/-	AKI in the context of concurrent pneumonitis, no improvement of SCr with IVF, slowly normalized 1 month later. Re-challenged with ICPI and developed recurrent pneumonitis and AKI, given prednisone and SCr improved to 0.7mg/dL
14	75 yo WM	1.04	2	0 prot 0-2 rbc	Dermatitis	-/-	-/-	AKI in the context of ICPI-associated rash. No improvement with IVF. Started on prednisone 80mg daily, tapered over 6 weeks, AKI resolved, but SCr rose once

				0-2 wbc				prednisone was discontinued, restarted prednisone 10mg/d and SCr remained in 1.2mg/dL range.
15	75 yo WF	0.61	1	ND	Hypophysitis	+/-	+/-	Asymptomatic rise in SCr to in the context of diagnosis of hypophysitis, without changes in PO intake or hemodynamic instability, AKI resolved on steroids and infliximab.
16	30 yo HM	0.57	1	0 prot 0-2 rbc 0-2 wbc	Thyroiditis	+/+	-/-	Asymptomatic rise in SCr at the time of diagnosis of ICPI-related hypothyroidism without any associated changes in oral intake or new nephrotoxin exposure.
17	55 yo WF	0.76	3	0 prot 0-2 rbc 3-5 wbc	Thyroiditis, Pancreatitis	+/+	+/-	AKI seen by nephrologist and diagnosed AIN (WBC clumps on sediment and lack of alternative cause). Slowly improved to 1.1 in 6 weeks with holding CPI, PPI and TMP-SMX. Also received dexamethasone 3mg BID. Not re-challenged with ICPI.
18	65 yo WM	0.63	1	ND	Thyroiditis, Rash, AI, Pancreatitis	+/-	+/-	AKI in the setting of thyroiditis, pancreatitis, rash. AKI persisted despite IVF. Treatment held with improvement in SCr. ICPI re-challenge led to a second AKI episode and new adrenal insufficiency. AKI resolved with prednisone 5mg/d.
19	65 yo WM	0.83	2	1 prot 20-50 rbc 5-10 wbc	Hepatitis	-/+	+/+	AKI in the setting of recent diagnosis of ICPI-induced hepatitis, treated with prednisone 60mg/d. Readmitted with gastroenteritis, worsening AKI and patient transitioned to hospice.
20	55 yo WF	0.70	1	Tr prot 0-2 rbc 50-100 wbc	Colitis, Thyroiditis, Adrenal insufficiency	+/+	+/-	AKI occurring at the time of diagnosis of pathologically confirmed ICPI-associated colitis, first episode AKI resolved with prednisone 50mg daily. Re-challenged two months later and developed hypothyroidism, AKI and adrenal insufficiency as a part of terminal decline.
21	35 yo WF	0.72	1	ND	Thyroiditis	+/+	+/+	AKI in the context of concurrent diagnosis of hypothyroidism, ICPI stopped due to cancer progression and creatinine normalized to near baseline.
22	75 yo WM	0.70	3	Tr prot 20-50 rbc 20-50 wbc	None	+/-	-/-	Unexplained rise in creatinine, nephrologist saw WBC casts and initiated high-dose steroids for AIN, but patient died of septic shock.
23	65 yo WM	0.66	1	1 prot 0-2 rbc 0-2 wbc	Colitis, Rash	+/-	+/-	AKI in the context of ICPI-associated rash, treated with prednisone 60mg daily, rapidly tapered, with resolution of rash and improvement in AKI. Re-challenged with ICPI and developed rash, AKI, transitioned to hospice.
24	75 yo BM	1.20	3	1 prot >100 rbc 10-20 wbc	Colitis	-/-	-/-	Admitted with AKI, confusion, and diarrhea. Colonoscopy showed ICPI-associated colitis. No improvement with IVF. Started on solumedrol 1G daily and SCr and colitis recovered quickly. Re-challenged 3mo later but after 1 cycle cancer progressed.
25	60 yo WM	0.77	2	0 prot 0-2 rbc 3-5 wbc	Thyroiditis, Hepatitis, Rash	+/+	+/+	Unexplained rise in SCr, NSAIDs stopped and given IVF, SCr continued to rise peaking at 2.19. AKI attributed to ICPI; therapy discontinued indefinitely with resolution of AKI
26	60 yo WF	0.70	2	0 prot 0-2 rbc 0-2 wbc	Colitis, Uveitis, Hepatitis	-/-	+/-	Admitted due to colitis, uveitis, and hepatitis attributed to ICPI therapy. Unexplained AKI despite supportive measures, transitioned to hospice.
27	70 yo WM	0.88	3	0 prot 0-2 rbc 5-10 wbc	Colitis, Pneumonitis, Dermatitis, Hypophysitis	+/+	+/-	AKI in the context of multiple other irAEs, no improvement with IVF, given prednisone 60mg daily, tapered over 10 weeks, with improvement in SCr to 1.2mg/dL, resumed ICPI with another AKI event. Baseline never fully recovered.
28	60 yo WF	1.46	2	0 prot 3-5 rbc 0-2 wbc	None	-/-	-/-	AKI, underwent kidney biopsy showing AIN with TMA, treated with prednisone 60mg daily with slow improvement to baseline SCr over 3mo.
29	75 yo WM	0.97	1	1 prot 0-2 rbc 0-2 wbc	Pneumonitis	+/+	+/-	Elevated SCr, initially rose after a CT with contrast but remained elevated for > 1 week, patient received prednisone 60mg/d prescribed for pneumonitis (detected on CT scan). Re-challenged with ICPI 4mo later with another AKI event, again treated with steroids.
30	50 yo WM	0.91	1	1 prot 0-2 rbc 0-2 wbc	Hepatitis, Thyroiditis	+/-	-/-	Unexplained rise in SCr in the context of new diagnosis of thyroiditis, treated with prednisone 60mg/d followed by 4-week taper with resolution of AKI.

Legend: PPI/NSAID use at baseline assessed at the time of ICPI initiation: 77/43%. PPI/NSAID use at AKI onset based on the medication list documented by the oncologist at the time of ICPI-related AKI: 67/20%. To protect confidentiality, the ages of patients have been rounded to the nearest 5-year landmarks.
Abbreviations: WM = white male, WF = white female, HM = Hispanic male, HF = Hispanic Female; BM = Black male, yo = years old, mo = months, SCr = serum creatinine, ICPI = immune checkpoint inhibitor, prot = protein, wbc = white blood cells, rbc = red blood cells, AIN = acute interstitial nephritis, irAE = immune related adverse event, AI = adrenal insufficiency, PPI – proton pump inhibitor, NSAIDS = non-steroidal anti-inflammatory drugs, TMP-SMX = Bactrim, TMA = thrombotic microangiopathy, CT = computed tomography.

Supplemental Table 4A: Events of sustained AKI and Death by eGFR group

eGFR (mL/min per 1.73 m^2)	Events (N)	Follow-up (month)												
		Baseline	1	2	3	4	5	6	7	8	9	10	11	12
> 90	Sustained AKI	0	4	9	11	3	0	2	1	4	1	1	1	0
	Death	0	48	41	28	11	20	11	15	10	10	2	5	9
	Free of events	406	354	304	265	251	231	218	202	188	177	174	168	159
60 - 90	Sustained AKI	0	9	3	5	1	5	7	1	1	0	1	0	2
	Death	0	35	38	23	18	17	20	14	16	13	9	6	10
	Free of events	441	397	356	328	309	287	260	245	228	215	205	199	187
< 60	Sustained AKI	0	2	3	1	1	2	1	0	0	0	0	0	0
	Death	0	20	16	5	10	11	8	4	4	8	1	1	2
	Free of events	169	147	128	122	111	98	89	85	81	73	72	71	69
All	Sustained AKI	0	15	15	17	5	7	10	2	5	1	2	1	2
	Death	0	103	95	56	39	48	39	33	30	31	12	12	21
	Free of events	1016	898	788	715	671	616	567	532	497	465	451	438	415

Supplemental Table 4B: Events of ICPI AKI and Death by eGFR group

eGFR (mL/min per 1.73 m^2)	Events (N)	Follow-up (month)												
		Baseline	1	2	3	4	5	6	7	8	9	10	11	12
> 90	ICPI AKI	0	1	2	7	3	0	0	0	1	0	0	0	0
	Death	0	49	45	31	12	22	12	15	12	11	2	6	11
	Free of events	406	356	309	271	256	234	222	207	194	183	181	175	164
60 - 90	ICPI AKI	0	1	1	2	0	2	2	0	0	0	0	0	2
	Death	0	40	40	26	19	19	21	15	18	13	10	7	10
	Free of events	441	400	359	331	312	291	268	253	235	222	212	205	193
< 60	ICPI AKI	0	1	2	0	1	2	0	0	0	0	0	0	0
	Death	0	20	16	6	12	11	9	4	4	8	1	1	2
	Free of events	169	148	130	124	111	98	89	85	81	73	72	71	69
All	ICPI AKI	0	3	5	9	4	4	2	0	1	0	0	0	2
	Death	0	109	101	63	43	52	42	34	34	32	13	14	23
	Free of events	1016	904	798	726	679	623	579	545	510	478	465	451	426

Supplemental Table 4C: Events of Sustained AKI and Death by baseline PPI use

Baseline PPI use	Events (N)	Follow-up (month)												
		Baseline	1	2	3	4	5	6	7	8	9	10	11	12
Yes	Sustained AKI	0	11	8	12	4	4	8	1	4	1	2	1	2
	Death	0	72	61	30	23	32	24	17	19	18	5	8	9
	Free of events	607	524	455	413	386	350	318	300	277	258	251	242	231
No	Sustained AKI	0	4	7	5	1	3	2	1	1	0	0	0	0
	Death	0	31	34	26	16	16	15	16	11	13	7	4	12
	Free of events	409	374	333	302	285	266	249	232	220	207	200	196	184
All	Sustained AKI	0	15	15	17	5	7	10	2	5	1	2	1	2
	Death	0	103	95	56	39	48	39	33	30	31	12	12	21
	Free of events	1016	898	788	715	671	616	567	532	497	465	451	438	415

Supplemental Table 4D: Events of ICPI AKI and Death by baseline PPI use

Baseline PPI use	Events (N)	Follow-up (month)												
		Baseline	1	2	3	4	5	6	7	8	9	10	11	12
Yes	ICPI AKI	0	3	3	7	4	1	2	0	1	0	0	0	2
	Death	0	77	64	34	26	34	26	17	23	18	6	10	11
	Free of events	607	527	460	419	389	354	326	309	285	267	261	251	238
No	ICPI AKI	0	0	2	2	0	3	0	0	0	0	0	0	0
	Death	0	32	37	29	17	18	16	17	11	14	7	4	12
	Free of events	409	377	338	307	290	269	253	236	225	211	204	200	188
All	ICPI AKI	0	3	5	9	4	4	2	0	1	0	0	0	2
	Death	0	109	101	63	43	52	42	34	34	32	13	14	23
	Free of events	1016	904	798	726	679	623	579	545	510	478	465	451	426

Legend (Tables 5A, 5B, 5C, 5D): Cumulative incidence curves for sustained AKI and ICPI AKI accounting for the competing risk of death are provided in figures 3 and 4. The breakdown by eGFR group and baseline PPI use is provided in these tables. Data was censored at the time of death, loss of follow-up, or at the end of the 12-month observation period, whichever happened first.

Abbreviation: ICPI = immune checkpoint inhibitor, eGFR = estimated glomerular filtration rate, PPI = proton pump inhibitor.

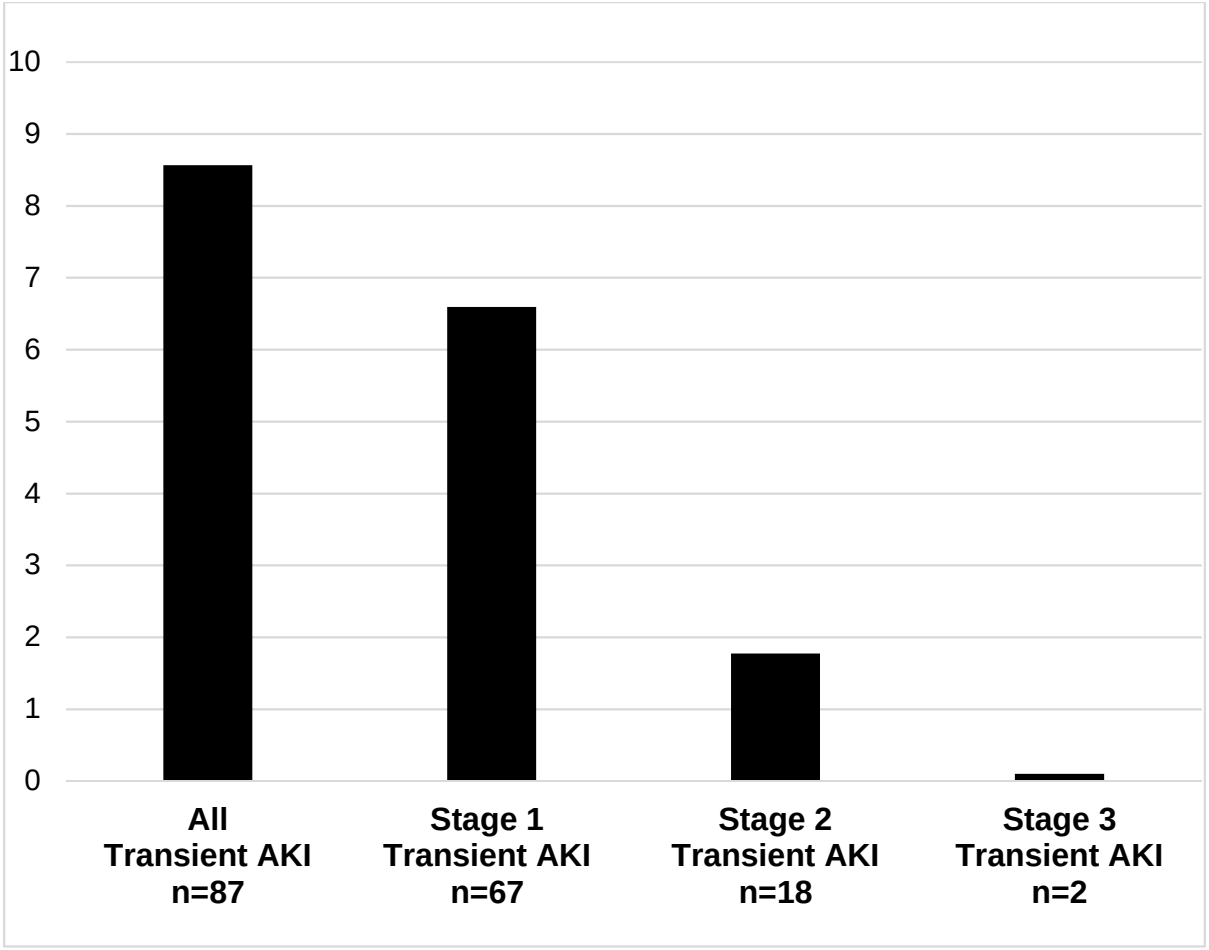
Supplemental Table 5: Incidence of 'sustained AKI' and 'potential ICPI related AKI' by year and drug type.

Year of ICPI administration	CTLA4	PD1	PDL1	Combined (CTLA4/PD1)	Incidence of sustained AKI	Incidence of ICPI-AKI
	Number of patients (percentage)				Percentage	Percentage
Overall	**249 (25)**	**701 (69)**	**37 (3)**	**29 (3)**	**8.1**	**3**
2011	31 (97)	1 (3)	0	0	6.3	3.1
2012	57 (93)	4 (7)	0	0	14.8	6.6
2013	52 (58)	38 (42)	0	0	5.6	2.2
2014	56 (52)	50 (47)	1 (1)	0	14	7.5
2015	42 (15)	227 (81)	3 (1)	8 (3)	6.4	1.4
2016	11 (3)	381 (85)	33 (7)	21 (5)	7.4	2.5

Legend: There was no statistically significant changes in the rates of sustained AKI or ICPI-related AKI by year of ICPI administration. PD1 inhibitors were much more commonly used starting 2015, while the use of CTLA4 inhibitors declined.

Abbreviations: AKI = acute kidney injury, eGFR = estimated glomerular filtration rate, PD1 = Programmed cell death protein 1, CTLA4 = cytotoxic T-lymphocyte associated antigen 4, PDL1 = programmed death ligand 1, Combined = ipilimumab (CTLA4) and nivolumab (PD1).

Supplemental Figure 1A and 1B: Incidence of transient AKI events by KDIGO stage and etiology of stage 2-3 transient AKI events.



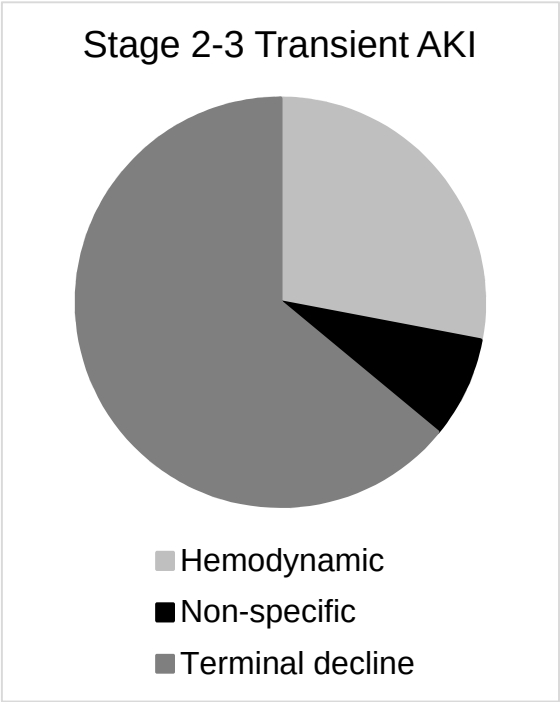
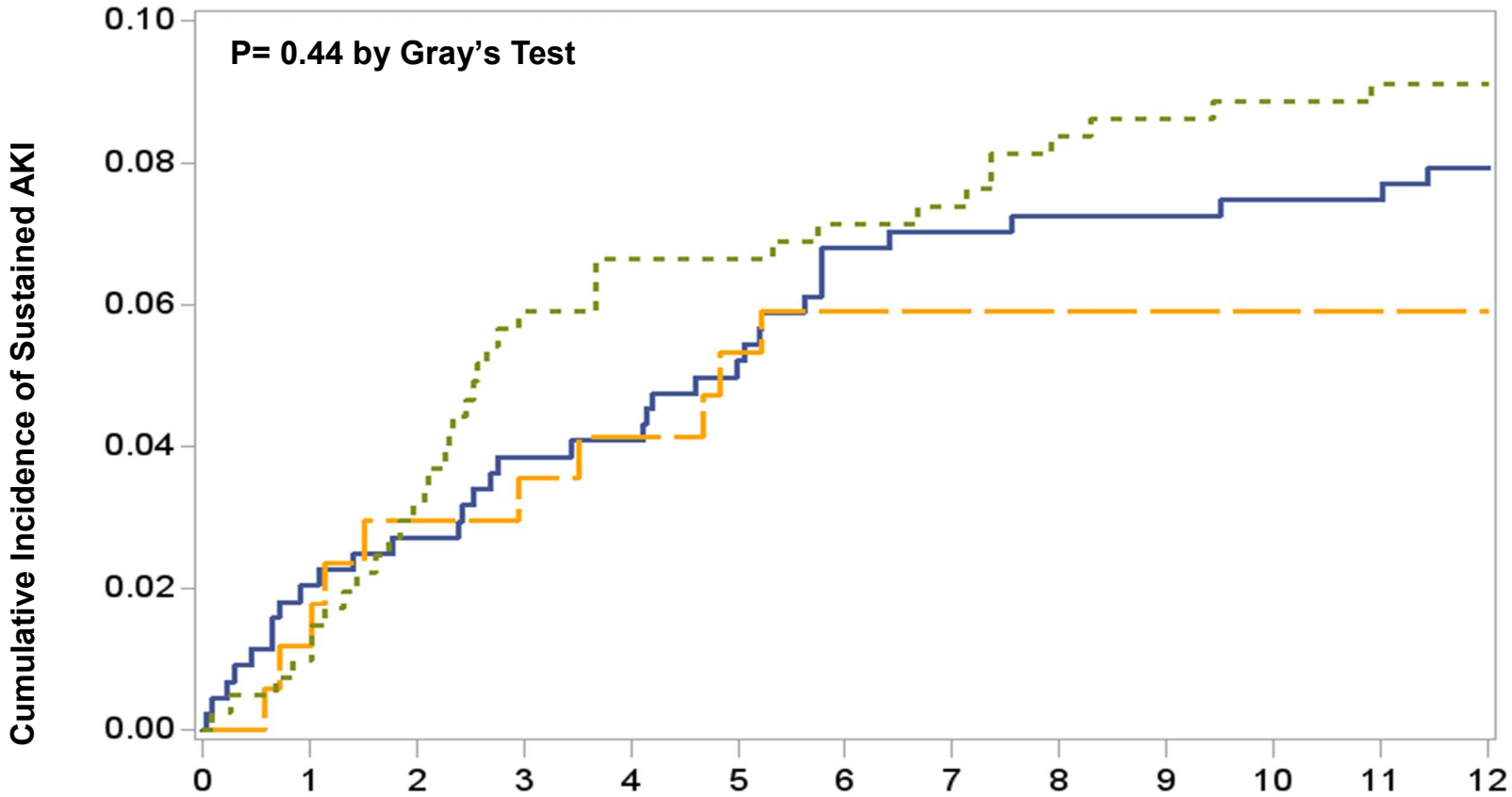


Figure 1 Legend: (A) 87 patients (8.6% of the total cohort N=1016) experienced a transient AKI event lasting ≤48 hours within 12 months of immune checkpoint inhibitor start date. Of these events, 67 (6.6%) met criteria for Stage 1 AKI (1.5-2 times the baseline creatinine), 18 (1.8%) had Stage 2 AKI (2-3 times the baseline creatinine) and 2 (0.2%) had Stage 3 AKI (>3 times the baseline creatinine). (B) Out of the 25 Stage 2-3 events (in 20

patients), majority of the events were part of terminal decline (64%, n=16), while others were due to hemodynamic causes (28%, n=7) or were of undetermined cause (8%, n=2).

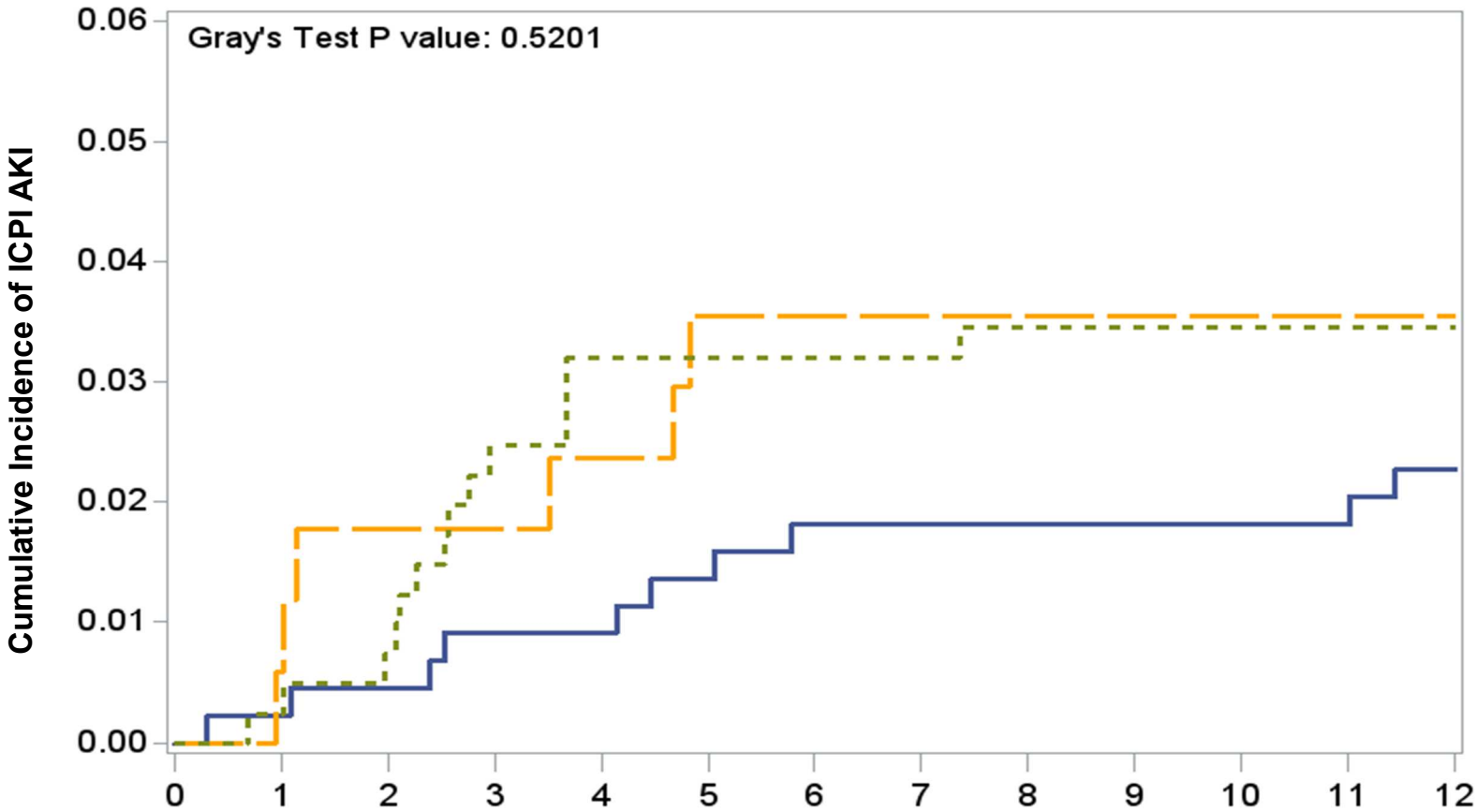
Supplemental Figure 2A. Cumulative Incidence curve for sustained AKI by eGFR group



Number at risk													
eGFR > 90	406	354	304	265	251	231	218	202	188	177	174	168	159
eGFR 60-90	441	397	356	328	309	287	260	245	228	215	205	199	187
eGFR < 60	169	147	128	122	111	98	89	85	81	73	72	71	69

Legend: There was no significant difference in the cumulative incidence of sustained AKI by baseline eGFR group. Patients were censored at the time of sustained AKI or their last serum creatinine measurement. The breakdown of events by sustained AKI and death for each group are provided in supplemental table 5A. Breakdown of events (death, AKI) is provided in supplemental table 5A. Abbreviation: AKI = Acute Kidney Injury.

Supplemental Figure 2B. Cumulative Incidence curve for potential immune checkpoint inhibitor-related AKI by eGFR group

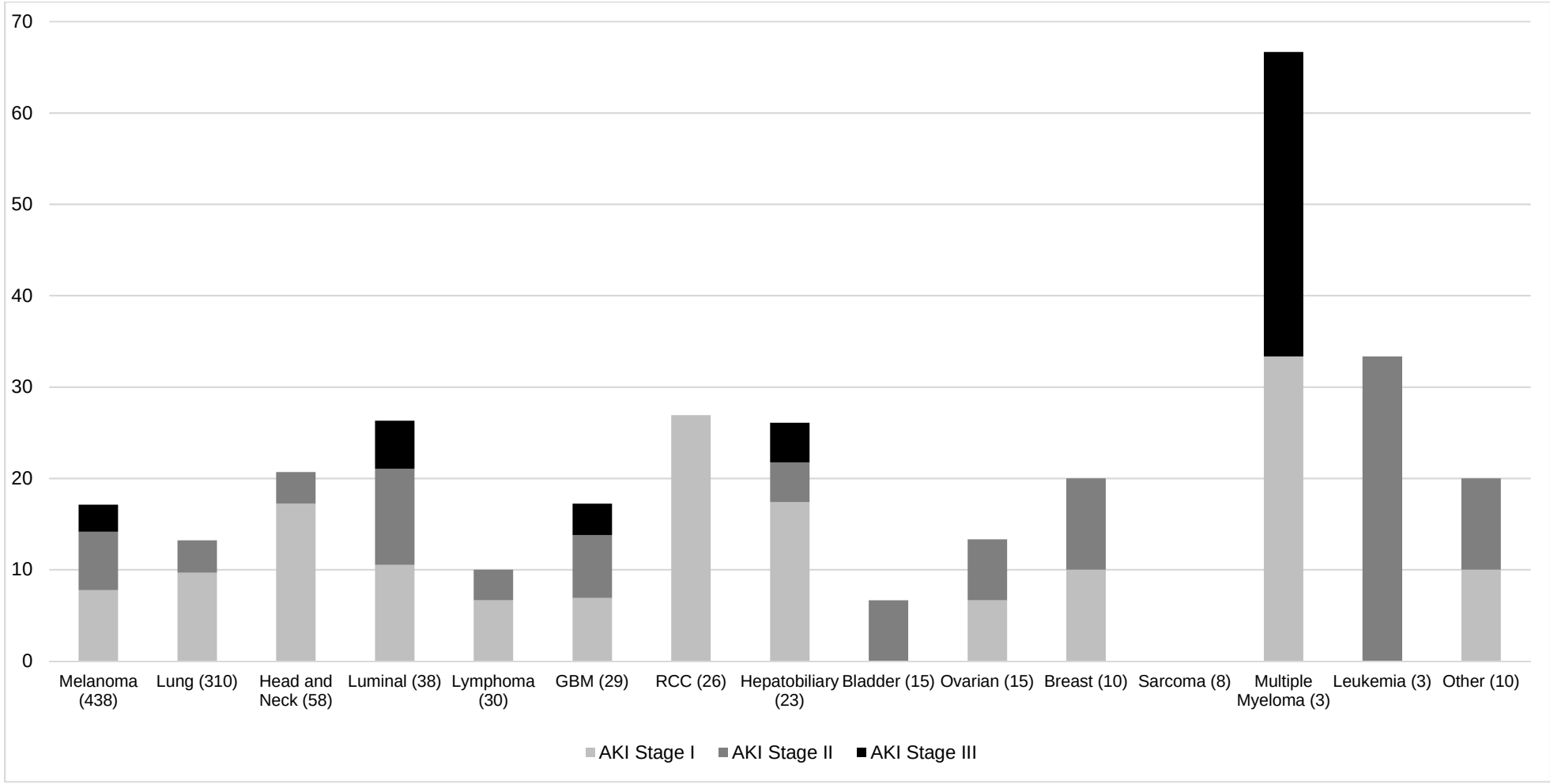


Number at risk													
eGFR > 90	406	356	309	271	256	234	222	207	194	183	181	175	164
eGFR 60-90	441	400	359	331	312	291	268	253	235	222	212	205	193
eGFR < 60	169	148	130	124	111	98	89	85	81	73	72	71	69

18	202	188	1
60	245	228	2
39	85	81	

Legend: There was no significant difference in the cumulative incidence of immune checkpoint inhibitor-related AKI by baseline eGFR group. Data was censored at the time of death, loss of follow-up, or at the end of the 12-month observation period, whichever happened first. Breakdown of events (death, AKI) is provided in supplemental table 5B. Abbreviation: AKI = Acute Kidney Injury

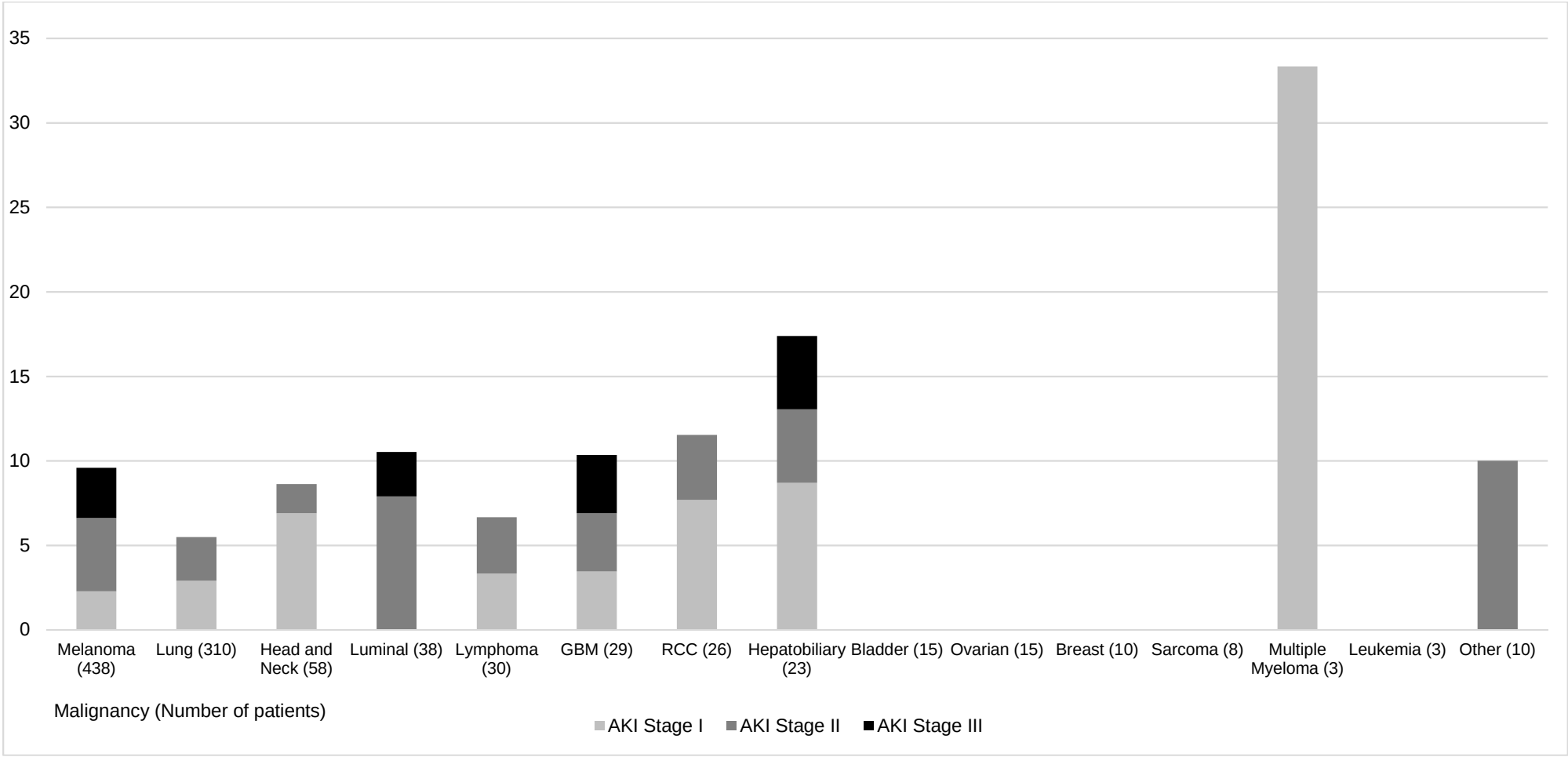
Supplemental Figure 3A. Incidence of 'any AKI' by malignancy type



Legend: Frequency and KDIGO grades of 'any AKI' events by malignancy type. Melanoma 17.1%, Lung 13.2%, Head and Neck 20.7%, Luminal (gastrointestinal) 26.3%, Lymphoma 10%, GBM= glioblastoma multiforme 17.2%, RCC = renal cell carcinomas 26.9%, Hepatobiliary including

hepatocellular carcinoma and cholangiocarcinoma 26%, Bladder cancer 6.7%, Ovarian 13.3%, Breast 20%, Multiple myeloma 66.7%, Leukemia 33.3%. There were no AKI events in sarcomas. Other tumors (4 pancreatic, 4 cervical, 1 squamous cell skin, 1 endometrial) had an incidence of 20%. Abbreviation: KDIGO = Kidney Disease Improving Global Outcomes

Supplemental Figure 3B. Incidence of 'sustained AKI' by malignancy type

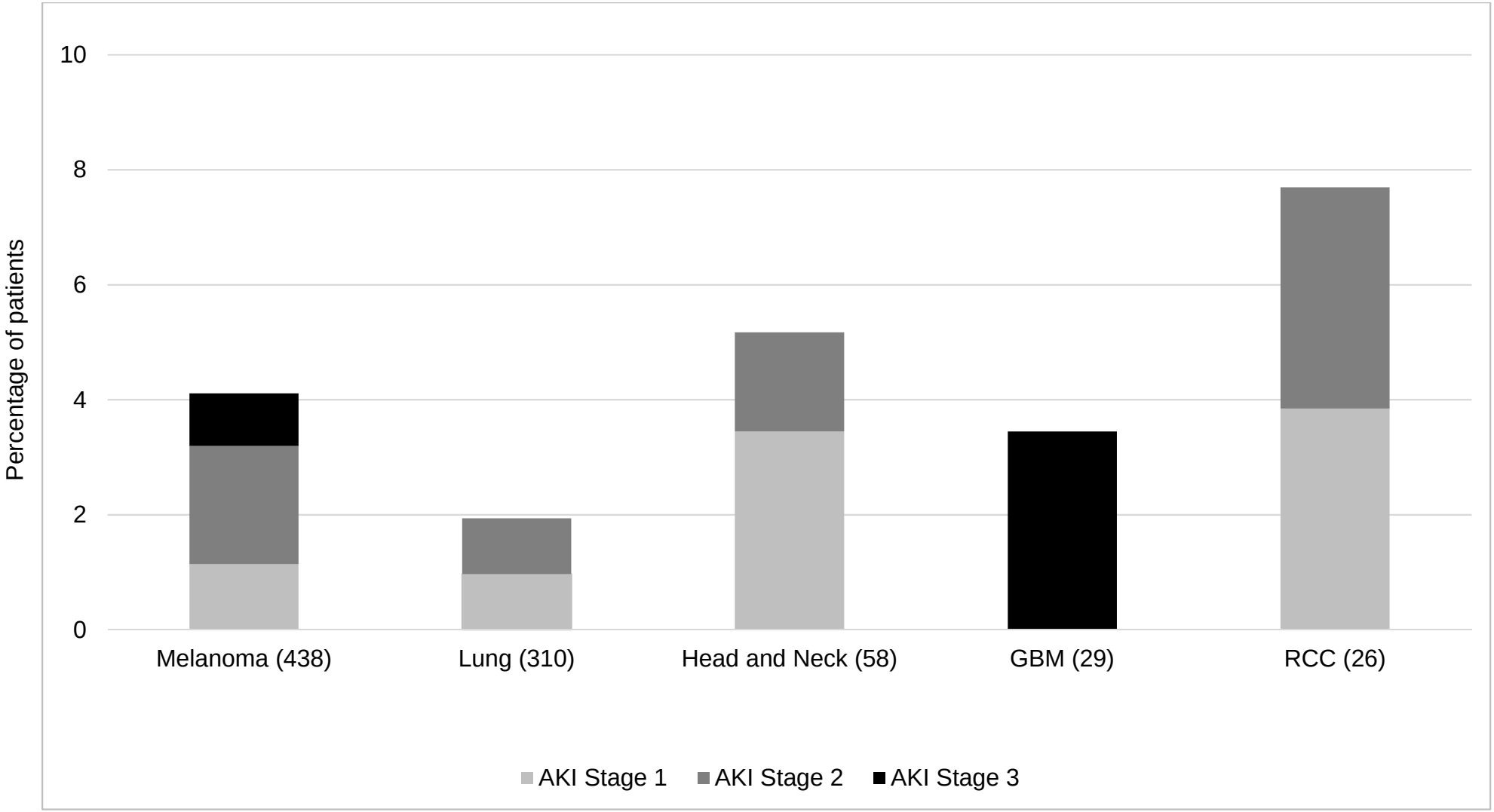


Legend: Frequency and KDIGO grades of 'sustained AKI' events by malignancy type. Melanoma 9.6%, Lung 5.5%, Head and Neck 8.6%, Luminal (gastrointestinal) 10.5%, Lymphoma 6.7%, GBM= glioblastoma multiforme 10.3%, RCC = renal cell carcinomas 11.5%, Hepatobiliary including

hepatocellular carcinoma and cholangiocarcinoma 17.4%, multiple myeloma 33.3%, Bladder cancer, breast cancer, ovarian cancer, leukemias and sarcomas had no cases of sustained AKI. Other tumors (4 pancreatic, 4 cervical, 1 squamous cell skin, 1 endometrial) had an incidence of 10%.

Abbreviation: KDIGO = Kidney Disease Improving Global Outcomes

Supplemental Figure 3C. Incidence of ‘potential ICPI-related AKI’ by malignancy type



Legend: Frequency and KDIGO grades of 'ICPI-related AKI' events by malignancy type. Melanoma 4.1%, Lung 1.9%, Head and Neck 5.1%, GBM= glioblastoma multiforme 3.5%, RCC = renal cell carcinomas 7.7%; Other types of malignancies [Lymphoma, luminal, hepatobiliary including hepatocellular carcinoma and cholangiocarcinoma, bladder cancer, multiple myeloma, breast cancer, ovarian cancer, leukemia, sarcomas, pancreatic, cervical, skin and endometrial] had no cases of ICPI-related AKI.

Abbreviation: ICPI = Immune checkpoint inhibitor, KDIGO = Kidney Disease Improving Global Outcomes

Supplemental Figure 4: Cumulative Incidence curve for sustained AKI by Vital Status

Legend: Patients were censored at the time of sustained AKI or their last serum creatinine measurement.

Abbreviation: AKI = Acute Kidney Injury