

**Supplemental Table 1: De-identified case summaries of patients with sustained AKI.**

ID	Etiology	Case summary	Concurrent AIN associated medications	Concurrent irAE	Steroids	Outcome
1	ICPI-NOS	65 yo WF with SCLC whose creatinine rose from 0.83 to 1.65mg/dL (stage 1 AKI) two months after starting atezolizumab that occurred in the context of new diagnosis of colitis, hyperthyroidism, and AKI; patient transitioned to hospice without full workup.	PPI	hypothyroidism	No	Terminal decline
2	ICPI-NOS	65 yo WF with RCC whose creatinine rose from 1.14 to 2.88mg/dL (stage 2 AKI) six months after starting atezolizumab, patient's creatinine did not improve despite volume repletion, then developed colitis and received corticosteroids with improvement in AKI. Not rechallenged with ICI.	PPI, NSAIDS, Amoxicillin	Colitis	Yes	Partial recovery
3	ICPI-AIN	50 yo WM with bladder cancer whose creatinine rose from 1.41 to 2.19mg/dL (stage 1 AKI) eight months after starting atezolizumab due to biopsy-proven AIN. Creatinine remained persistently elevated in the 1.9-2.2mg/dL range despite prednisone 60mg daily. Not rechallenged further with ICI	Ciprofloxacin	0	Yes	No recovery
4	ICPI-NOS	65 yo WM with bladder cancer whose creatinine rose from 1.14 to 6.61mg/dL (stage 3 AKI) four months after starting atezolizumab due to clinically diagnosed AIN that fully recovered with prednisone 60mg daily tapered by 10mg/week. Not rechallenged with ICI.	Levofloxacin	0	Yes	Full recovery
5	ICPI-NOS	55 yo WF with NSCLC whose creatinine rose from 0.69 to 1.21mg/dL (stage 1 AKI) four months after starting durvalumab which occurred concurrently with immune-mediated cytopenias and resolved with discontinuation of durvalumab. Eleven months later, patient was re-challenged with nivolumab and despite continuing to take NSAIDs as needed, the patient did not develop recurrent AKI.	NSAIDS	Cytopenias	No	Full recovery
6	Hemodynamic AKI/ATN	70 yo WF with bladder cancer whose creatinine rose from 1.75 to 2.78mg/dL (stage 1 AKI) seven months after starting avelumab due to prerenal azotemia from volume depletion and hypercalcemia, improved with supportive care.	NSAIDS	0	No	Partial recovery
7	Hemodynamic AKI/ATN	55 yo WF with ovarian cancer whose creatinine rose from 0.84 to 2.83 mg/dL (stage 3 AKI) 2 weeks after starting avelumab due to poor oral intake, improved with volume repletion.	PPI	0	No	Partial recovery
8	Hemodynamic AKI/ATN	75 yo WF with ovarian cancer whose creatinine rose from 1.01 to 4.82mg/dL (stage 3 AKI) four months after starting avelumab due to febrile neutropenia and septic shock leading to death.	NSAIDS	hyperthyroidism	No	Terminal decline
9	Hemodynamic AKI/ATN	75 yo WF with ovarian cancer whose creatinine rose from 0.79 to 2.49mg/dL (stage 3 AKI) two weeks after starting avelumab due to bowel obstruction from widely metastatic cancer leading to intraabdominal sepsis, shock, and death.	None	0	No	Terminal decline
10	Hemodynamic AKI/ATN	65 yo WM with smoldering multiple myeloma whose creatinine rose from 1.08 to 2.00mg/dL (stage 1 AKI) four months after starting durvalumab, attributed to conversion to active myeloma (kappa light chain predominant), creatinine improved with volume repletion and beginning lenalidomide, bortezomib, and dexamethasone induction.	None	hypothyroidism	No	Partial recovery
11	Hemodynamic AKI/ATN	45 yo WM with NSCLC whose creatinine rose from 0.93 to 2.51mg/dL (stage 2 AKI) one month after starting atezolizumab due to contrast exposure and shock, ultimately died of respiratory failure from pulmonary embolus and rapid cancer progression.	Levofloxacin	0	No	Terminal decline
12	Hemodynamic AKI/ATN	60 yo WF with NSCLC whose creatinine rose from 0.82 to 3.02mg/dL (stage 3 AKI) five months after starting atezolizumab due to intraabdominal shock (chronic	PPI, NSAIDS, Antibiotics	0	No	Terminal decline

		diverticulitis/pericolonic abscess with bowel perforation), cardiopulmonary arrest, ultimately leading to death.				
13	Hemodynamic AKI/ATN	75 yo WM with NSCLC whose creatinine rose from 0.90 to 1.68mg/dL (stage 1 AKI) one week after starting atezolizumab due to cholecystitis (symptoms/imaging signs predated ICI initiation) requiring percutaneous drainage and broad-spectrum antibiotics. Resolved with supportive care. Rechallenged with no recurrence of AKI.	PPI	0	No	Full recovery
14	Hemodynamic AKI/ATN	65 yo WF with NSCLC whose creatinine rose from 0.88 to 1.55mg/dL (stage 1 AKI) two months after starting durvalumab due to sepsis from pneumonia and volume depletion, improved with supportive care and antibiotics.	NSAIDS	0	No	Partial recovery
15	Hemodynamic AKI/ATN	55 yo WF with breast cancer whose creatinine rose from 0.93 to 1.60 (stage 1 AKI) seven months after starting atezolizumab due to volume depletion that resolved with volume repletion. Rechallenged with no recurrence of AKI.	None	hypothyroidism	No	Full recovery
16	Hemodynamic AKI/ATN	70 yo WF with breast cancer whose creatinine rose from 1.04 to 2.01 eight months after starting avelumab due to poor PO intake, improved with volume repletion, no concurrent irAE.	PPI	0	No	Partial Recovery
17	Hemodynamic AKI/ATN	55 yo BF with rectal cancer whose creatinine rose from 0.59 to 1.85mg/dL (stage 3 AKI) four months after starting atezolizumab due to sepsis from bacteremia, ultimately leading to death.	PPI, NSAIDS, Ciprofloxacin	0	No	Terminal decline
18	Hemodynamic AKI/ATN	70 yo WM with melanoma whose creatinine rose from 0.72 to 1.27mg/dL (stage 1 AKI) nine month after starting atezolizumab due to volume depletion and anemia, recovered after a blood transfusion. Rechallenged with no recurrence of AKI.	None	rash	No	Full recovery
19	Hemodynamic AKI/ATN	75 yo AM with bladder cancer whose creatinine rose from 1.76 to 4.85mg/dL (stage 2 AKI) six months after starting atezolizumab due to blood culture-positive urosepsis, resolved with antibiotics and supportive care.	None	0	No	Full recovery
20	Hemodynamic AKI/ATN	70 yo WM with RCC whose creatinine rose from 1.84 to 2.93mg/dL (stage 1 AKI) 6 weeks after starting atezolizumab and bevacizumab, attributed to bevacizumab given new proteinuria (5.3 g/24 hours), improved with holding both agents.	PPI	0	No	Partial recovery
21	Hemodynamic AKI/ATN	60 yo WF with ovarian cancer whose creatinine rose from 0.96 to 2.05mg/dL (stage 2 AKI) four months after starting avelumab due to volume depletion, which improved with volume repletion and blood transfusion.	NSAIDS	0	No	Partial recovery
22	Hemodynamic AKI/ATN	80 yo WM with SCLC cancer whose creatinine rose from 1.25 to 4.02mg/dL (stage 3 AKI) eight months after starting atezolizumab due to septic shock from aspiration pneumonia leading to death.	PPI	0	No	Terminal decline
23	Hemodynamic AKI/ATN	80 yo M with NSCLC cancer whose creatinine rose from 1.31 to 2.18mg/dL (stage 1 AKI) four months after starting atezolizumab due to poor oral intake that improved with intravenous volume repletion.	PPI	0	No	Partial recovery
24	Hemodynamic AKI/ATN	65 yo WF with NSCLC whose creatinine rose from 0.81 to 2.16mg/dL (stage 2 AKI) six months after starting atezolizumab due to excessive alcohol intake and lisinopril use, fully resolved with holding lisinopril and oral volume repletion. ICI was stopped, patient was not rechallenged.	PPI	0	No	Full recovery
25	Hemodynamic AKI/ATN	55 yo WM with NSCLC whose creatinine rose from 0.86 to 1.54mg/dL (stage 1 AKI) eleven months after starting atezolizumab due to poor oral intake and NSAID use, resolved with volume repletion. Rechallenged with no recurrence of AKI.	PPI, NSAIDS	hypothyroidism	No	Full recovery
26	Hemodynamic AKI/ATN	50 yo WF with colorectal cancer whose creatinine rose from 0.46 to 1.72mg/dL (stage 3 AKI) in the context of sepsis/bacteremia 4.5 months after starting atezolizumab, recovered with supportive care. Rechallenged with no recurrence of AKI.	None	0	No	Full recover

27	Hemodynamic AKI/ATN	80 yo WM with bladder cancer whose creatinine rose from 1.64 to 3.19 (stage 1 AKI) ten months after beginning atezolizumab due to septic shock from small bowel obstruction and decompensated congestive heart failure leading to death.	None	0	No	Terminal decline
28	Hemodynamic AKI/ATN	75 yo WM with bladder cancer whose creatinine rose from 1.31 to 2.22mg/dL (stage 1 AKI) seven months after starting atezolizumab due to prerenal azotemia from poor oral intake and placed on hospice.	None	hypothyroidism	No	No recovery
29	Obstruction	80 yo WM with bladder cancer whose creatinine rose from 1.24 to 2.55mg/dL (stage 2 AKI) two weeks after starting atezolizumab due to cancerous obstruction of renal pelvis and ureter that resolved with PCN tube placement.	NSAIDS	0	No	Full recovery
30	Obstruction	75 yo WF with ovarian cancer whose creatinine rose from 0.85 to 1.78mg/dL (stage 2 AKI) seven months after starting durvalumab due to bilateral urinary obstruction from cancer progression that resolved with PCN tube placement.	None	0	No	Full recovery
31	Obstruction	55 yo WM with DLBCL whose creatinine rose from 0.62 to 6.45mg/dL (stage 3 AKI) five months after starting atezolizumab due to bilateral urinary obstruction from extrinsic compression due to bulky abdominal lymphadenopathy that resolved with PCN tube placement.	NSAIDS	0	No	Full recovery
32	Obstruction	60 yo WM with bladder cancer whose creatinine rose from 1.20 to 3.33mg/dL (stage 2 AKI) five months after starting atezolizumab due to disease progression, cancerous obstruction requiring PCN tubes placed.	None	0	No	Partial recovery
33	Obstruction	75 yo WM with prostate cancer whose creatinine rose from 1.44mg/dL to 4.6mg/dL (stage 3 AKI) four months after starting atezolizumab due to disease progression, bladder outlet obstruction, and ultimately led to hospice enrollment and death.	PPI	0	No	Terminal decline
34	NOS	60 yo WF with NSCLC whose creatinine rose from 0.71 to 1.16mg/dL (stage 1 AKI) eight months after starting durvalumab without diagnostic workup, recovered without intervention.	None	0	No	Full recovery
35	NOS	60 yo WF with cholangiocarcinoma whose creatinine rose from 0.61 to 1.57mg/dL (AKI stage 2) ten months after starting atezolizumab, had slowly progressively rise in creatinine in the context of recurrent E.coli UTI (also had a history of recurrent UTI prior to ICI treatment as well), remained on atezolizumab, no concurrent irAEs.	PPI, ciprofloxacin	0	No	Partial Recovery
36	NOS	60 yo WF with ovarian cancer whose creatinine rose from 0.70 to 2.01mg/dL (stage 2 AKI) five months after starting avelumab and talazoparib, patient was volume repleted with only partial improvement. Avelumab was stopped due to disease progression. Kidney function slowly recovered.	PPI, NSAIDS	0	No	Partial recovery

Legend: Outcomes of AKI were defined by serum creatinine levels: 1) full recovery (if the creatinine recovered to  $\leq 0.3$ mg/dL of baseline), 2) partial recovery (improvement from peak, but not within 0.3mg/dL of prior baseline), and 3) no recovery (if serum creatinine worsened) or 4) terminal decline if the patient died during the hospitalization for AKI. To protect confidentiality, the ages of patients have been rounded to the nearest 5-year landmarks. Concurrent medications include those administered at the time of AKI. Abbreviations: WM = white male, WF = white female, BM = Black male, AM = Asian male, yo = years old, Cr = serum creatinine, ICPI = immune checkpoint inhibitor, NOS = not otherwise specified, AIN = acute interstitial nephritis, ATN = acute tubular necrosis, irAE = immune related adverse event, PPI = proton pump inhibitor, NSAIDS = non-steroidal anti-inflammatory drugs, UTI = urinary tract infection, PCN = percutaneous nephrostomy tube, RCC = Renal cell cancer, NSCLC = Non-small cell lung cancer, DLBCL = Diffuse Large B-cell Lymphoma