

# UNPLANNED READMISSION AMONG PATIENTS WITH ADVANCED CANCER ON ACTIVE TREATMENT: MULTI-CENTER, RETROSPECTIVE STUDY

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## BACKGROUND

- recnac htiw steinitaP, particularly those with advanced diseases, frequently require intensive healthcare services, including repeated hospitalizations.
- Unplanned readmissions, frequently studied in surgical oncology, occur in cancer patients due to symptoms or treatment complications, contributing to increased costs and disrupted care.
- However, limited data exist on unplanned admissions among those with advanced cancer receiving active treatment.
- This study examines the **reasons, clinical characteristics, and subsequent discharge and post-discharge outcomes of these readmissions.**

## METHODS

### Study Design and Population

- morf detcelloc sdrocer lacidem no desab sisylana evitcepsorter a saw yduts sihTsix **university hospitals** in the Republic of Korea.
- Inclusion criteria: adult patients with **advanced solid cancer** (ICD-10 code; C00-C79) who experienced unplanned readmissions within one month of a prior hospitalization in 2019.
- Unplanned readmission** defined as **any type of hospitalization except for those planned for chemotherapy, scheduled surgeries or procedures, or evaluation.**
- Exclusion criteria: terminal cancer without active treatment plans before the index hospitalization and those who had used inpatient or home hospice.

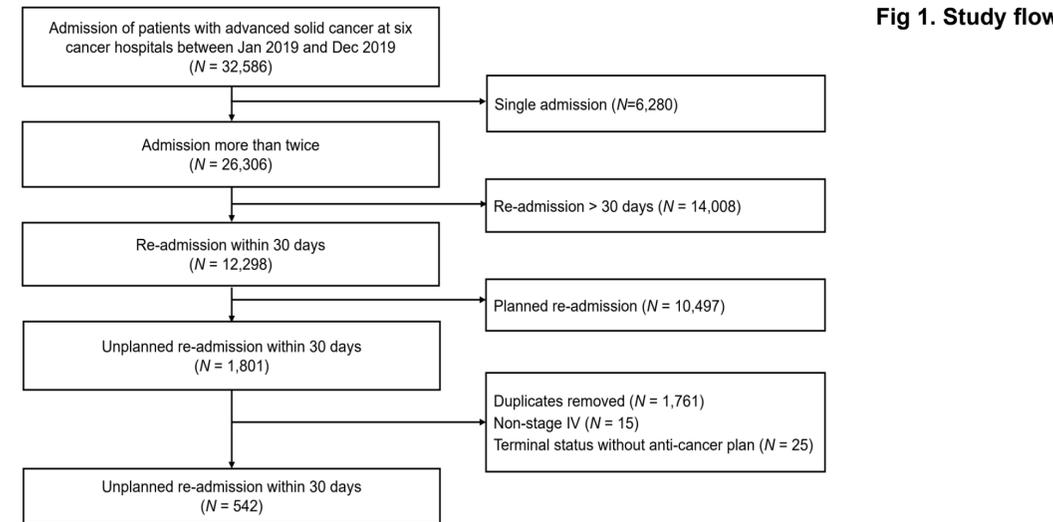
### Data collection and measurements

- At the time of unplanned readmission** - age, sex, insurance, cancer type, duration of stage IV disease, reasons for stage IV, comorbidities (non-cancer).
- At the last discharge before the index readmission** - disease status, lines of palliative chemotherapy, any chemotherapy within 30 days before readmission.
- Information related to index readmission** - duration from the last discharge, admission route, location, chief complaints, and type of unplanned readmission.
- Unplanned readmissions were classified as **Cancer Progression** (e.g., worsening disease symptoms), **Treatment-Related** (e.g., complications from therapy), and **Other** (e.g., non-cancer-related illnesses or injuries).
- Readmission outcomes** - length of stay, discharge outcomes, discharge location of live patients, medical interventions during the hospitalization.
- For survivors with six-month follow-up data** - unplanned hospital use within 3-time intervals; 0-1 month, 1-3 months, 3-6 months post-discharge. Poor outcome defined as **unplanned admissions within 1 or 3 months and emergency department visits within 1 month.**

### Statistical analysis

- scitsitats evitpirceD; for comparisons among the three groups -> the chi-square test or Fisher's exact test for categorical vv., and the Kruskal-Wallis test for continuous vv.

## RESULTS



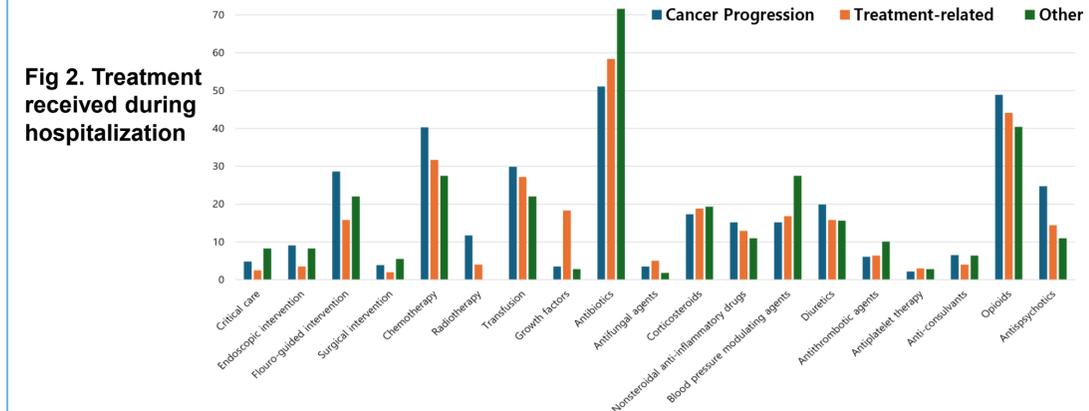
Unplanned readmission categorized as **Cancer Progression (42.6%), Treatment-Related (37.3%), and Other (20.1%).**

**Table 1. Baseline demographic and clinical characteristics of patients**

Variables	Total (N=542)		Cancer Progression (n=231)		Treatment-related (n=202)		Other (n=109)		P value
	n	%	n	%	n	%	n	%	
<b>Age (years)</b>									
≥65	267	49.3	106	45.9	95	47	66	60.5	0.03
<65	275	50.7	125	54.1	107	53	43	39.5	
<b>Sex</b>									
Male	310	57.2	137	59.3	109	54	64	58.7	0.5
Female	232	42.8	94	40.7	93	46	45	41.3	
<b>Insurance</b>									
National health insurance	504	93	212	91.8	185	91.6	107	98.2	0.044
Medical aid	38	7	19	8.2	17	8.4	2	1.8	
<b>Cancer diagnosis</b>									
Gastrointestinal (C15–C21, C26)	120	22.1	46	19.9	46	22.8	28	25.7	0.036
Hepatobiliary-pancreas (C22–C25)	125	23.1	60	26	34	16.8	31	28.4	
Lung and intrathoracic (C30–C39)	138	25.4	68	29.4	49	24.3	21	19.3	
Breast (C50)	51	9.4	15	6.5	25	12.4	11	10.1	
Other	108	19.9	42	18.2	48	23.7	18	16.5	
<b>Non-cancer Charlson comorbidity index</b>									
0	298	55	124	53.7	124	61.4	50	45.9	0.105
1	165	30.4	70	30.3	55	27.2	40	35.7	
2 or more	79	14.6	37	16	23	11.4	19	17.4	
<b>Lines of palliative chemotherapy received</b>									
<2	258	47.6	107	46.3	97	48	54	49.5	0.848
2 or more	284	52.4	124	53.7	105	52	55	50.5	
<b>Chemotherapy within 1 month before index date</b>									
Overall	455	83.9	186	80.5	180	89.1	89	81.6	0.04
Cytotoxic	338	62.4	131	56.7	136	67.3	71	65.1	0.06
<b>Disease status at previous discharge</b>									
Remission	14	2.6	0	0	11	5.4	3	2.7	<0.001
Stable	291	53.7	111	48	112	55.5	68	62.4	
Progressive	223	41.1	115	49.8	73	36.1	35	32.1	
Not evaluable	14	2.6	5	2.2	6	3	3	2.7	

**Table 2. noissimdaer dennalpnu eht fo scitsiretcarahC**

Variables	Total (N=542)		Cancer Progression (n=231)		Treatment-related (n=202)		Other (n=109)		P value
	n	%	n	%	n	%	n	%	
<b>Time from discharge to readmission</b>									
Median (IQR)	10	5-17	12	6-17	8	5-15	10	5-17	0.092
<b>Route of readmission</b>									
via outpatient clinic	209	38.6	103	44.6	77	38.1	29	26.6	0.006
via emergency department	333	61.4	128	55.4	125	61.9	80	73.4	
<b>Length of hospital stay</b>									
Median (IQR)	10	5-17	12	6-19	8	5-16	10	5-16	0.004
<b>Discharge outcome</b>									
Death	89	16.4	54	23.4	17	8.4	18	16.5	<0.001
Alive	453	83.6	177	76.6	185	91.6	91	83.5	
<b>Discharge location of alive patients</b>									
Home	396	87.4	147	83.1	168	90.8	81	89	0.074
Hospital	57	12.6	30	16.9	17	9.2	10	11	



**Table 3. Post-discharge outcomes among patients who survived (n=445)**

Variables	Time from the date of discharge from the index admission					
	0 ~ 1mo		> 1mo ~ 3mo		> 3mo ~ 6mo	
	n	%	n	%	n	%
<b>Number of follow-up patients</b>	445	100	392	88.1	295	66.3
<b>Follow-up duration, median (Q1-Q3) (days)</b>	173	66-503	197.5	92-587.5	328	173-719
<b>Death during the period</b>	53	11.9	97	24.7	83	28.1
<b>Patients who experienced unplanned admission</b>	111	24.9	123	31.4	97	32.8
<b>No. of unplanned admission</b>	124	28.9	166	38.7	139	32.4
<b>Patients who visited emergency department</b>	111	24.9	119	30.4	92	31.2
<b>No. of emergency department visit</b>	136	29.8	168	36.7	153	33.5

## CONCLUSION

- Unplanned readmissions in those with advanced cancer exhibit distinct patterns by causes, with a high frequency of unplanned hospital use within one month post-discharge. Recognizing these patterns emphasizes the need for tailored strategies to reduce unplanned hospitalizations and improve care.