An Estimation of Guideline Adherence to Nausea and Vomiting Prophylaxis in Patients Receiving Concurrent Chemoradiation for Lung Cancer, and the Implications of Adherence to these Guidelines: A State-wide, Population-based Study

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CERCIT Presentation

August 19, 2011

Outline of Talk

- Background
  - Scope of Problem
  - Clinical and Economic Consequences
  - Barriers to Effective Treatment
- Preliminary Background Studies
- Research Design
  - Conceptual Framework
  - Data Source
  - Study Population
- Aim 1 – Estimate Guideline Adherence
- Aim 2 – Identify patient, provider, and area factors that predict adherence
- Aim 3 – Describe clinical and economic outcome of adherence
- Preliminary Results
- Limitations/Obstacles
- Future Directions
- Open Discussion

Background

- Nausea/vomiting (N/V) is prevalent in treatment of lung cancer
- Most chemotherapeutic regimens platinum-based
  - Cisplatin – High Emetic Risk (HER) per NCCN guidelines
    - >90% frequency of emesis
  - Carboplatin – Moderate Emetic (HER) Risk per NCCN guidelines
    - 60-90% frequence of emesis
- If radiation therapy delivered with chemotherapy, increases frequency due to dose to esophagus

Background

- N/V during chemoradiation for lung cancer has profound clinical and economic consequences
  - Related symptoms include malaise, dehydration, electrolyte abnormalities, weight loss, feeding tube placement, hospitalization, and death
- These sequelae can in turn lead to decreased treatment adherence, leading to inadequate therapy

Background

Resource utilization and costs associated with chemotherapy-induced nausea and vomiting (CINV) following highly or moderately emetogenic chemotherapy administered in the US outpatient hospital setting

Thomas A. Burke · Tami Wisniewski · Frank R. Ernst

Table 3 CINV-related healthcare resource utilization in the first cycle after outpatient receipt of HEC or MEC in US hospitals

	HEC		MEC		All patients	
	(*N*=3,069)		(*N*=16,070)		(*N*=19,139)	
	N	(%)	*N*	(%)	*N*	(%)
Any CINV visit[a]	553	(18.0)	2,088	(13.0)	2,641	(13.8)
Inpatient admission	352	(11.5)	1,358	(8.5)	1,710	(8.9)
Emergency room visit	59	(1.9)	197	(1.2)	256	(1.3)
Outpatient hospital visit	148	(4.8)	538	(3.3)	686	(3.6)
Any acute CINV visit	10	(0.3)	31	(0.2)	41	(0.2)
Inpatient admission	3	(0.1)	7	(<0.1)	10	(0.1)
Emergency room visit	2	(0.1)	6	(<0.1)	8	(<0.1)
Outpatient hospital visit	5	(0.2)	18	(0.1)	23	(0.1)
Any delayed CINV visit	549	(17.9)	2,074	(12.9)	2,623	(13.7)
Inpatient admission	349	(11.4)	1,352	(8.4)	1,701	(8.9)
Emergency room visit	57	(1.9)	193	(1.2)	250	(1.3)
Outpatient hospital visit	143	(4.7)	529	(3.3)	672	(3.5)

Costs are in US$ and pertain to the year of therapy (2003–2007). Costs are rounded to the nearest dollar

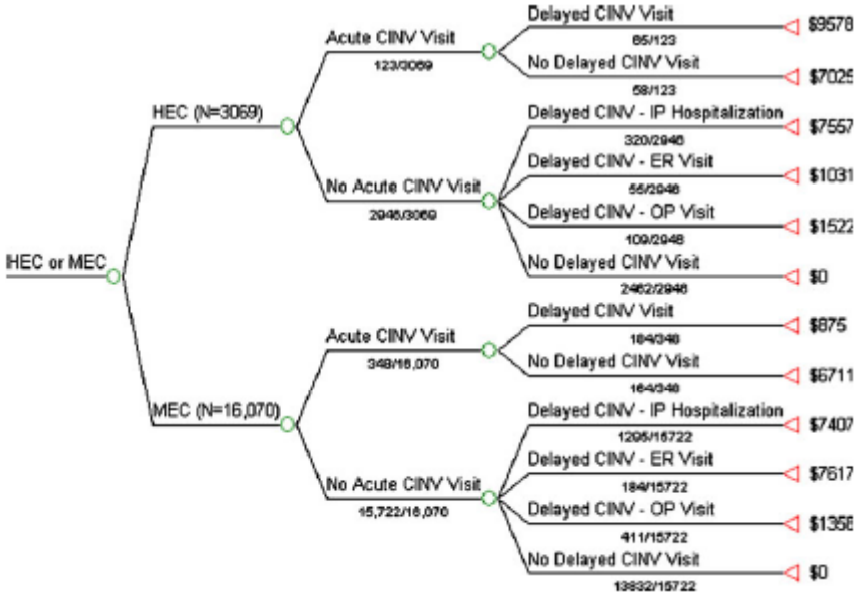
HCRU healthcare resource use, *Acute* a CINV visit on the same day as chemotherapy administration, excluding CINV coded as a primary or secondary diagnosis on the chemotherapy administration visit claim, *Delayed* a CINV visit on the day after chemotherapy until 30 days or the next chemotherapy (whichever came first)

[a] Patients were classified as experiencing at most two events (one event during the acute phase and one event during the delayed phase). For patients with multiple events within a phase, the patient was classified according to the hierarchy of inpatient > emergency room > outpatient hospital visit. Any CINV HCRU is less than the sum of components of site of care (inpatient, emergency room, or outpatient) for acute and delayed combined

Burke et al., *Support Care Cancer* 2011; 19: 131-40.

Background

Fig. 1 Tree diagram of CINV hospital visits and CINV costs after a first cycle of HEC or MEC. *IP* inpatient, *ER* emergency room, *OP* outpatient hospital visit. Costs are in US$

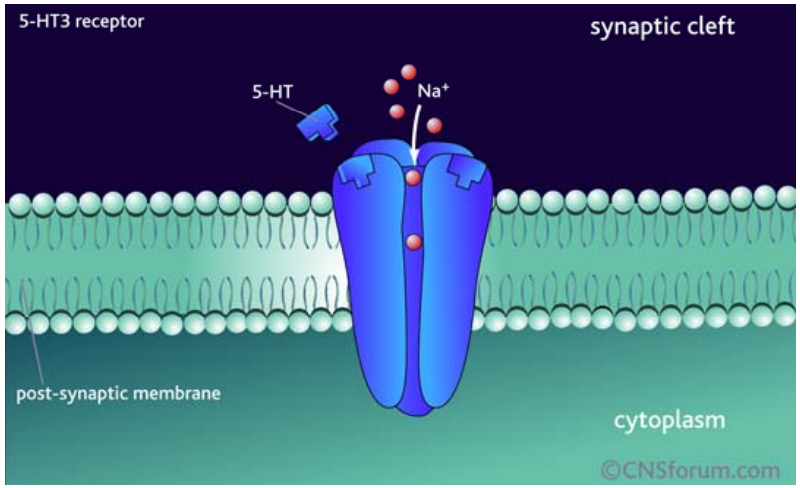


Authors' Conclusions: CINV visits in the first cycle of HER or MER chemotherapy were "common and costly." Strategies to reduce CINV could reduce healthcare utilization and costs.

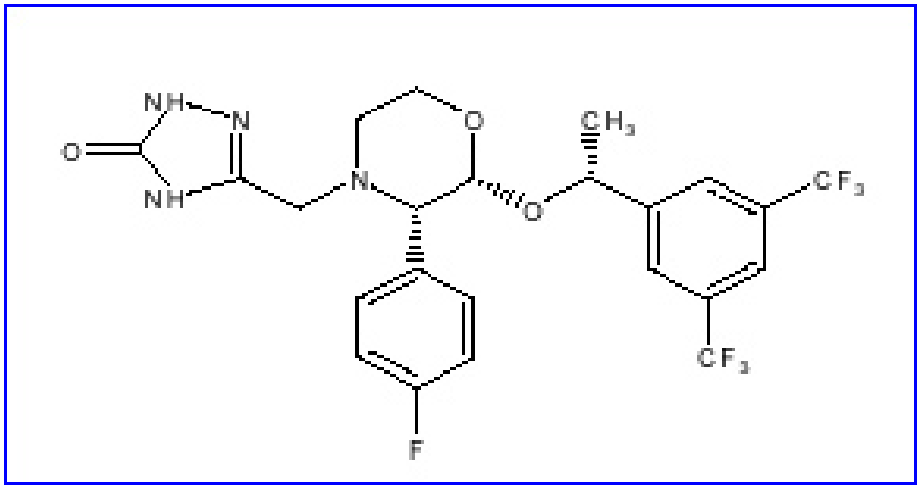
Background

- There is effective treatment for prophylaxis of N/V in lung cancer

5-HT3 Antagonists
(Zofran, Kytril)



Substance P/ Neurokinin A
Antagonists (aprepitant)



Background

VOLUME 27 · NUMBER 32 · NOVEMBER 10 2009

JOURNAL OF CLINICAL ONCOLOGY

ORIGINAL REPORT

Phase III Trial of Casopitant, a Novel Neurokinin-1 Receptor Antagonist, for the Prevention of Nausea and Vomiting in Patients Receiving Moderately Emetogenic Chemotherapy

Jørn Herrstedt, Wichit Apornwirat, Ahmed Shaharyar, Zeba Aziz, Fausto Roila, Simon Van Belle, Mark W. Russo, Jeremey Levin, Salabha Ranganathan, Mary Guckert, and Steven M. Grunberg

Table 3. Percentage of Patients Who Achieved Efficacy End Points

Efficacy End Point	Control (n = 479)	Single Oral Dose Casopitant (n = 479)	3-Day Oral Casopitant (n = 480)	3-Day IV/Oral Casopitant (n = 479)
Overall complete response	59	73*	73*	74*
Acute	86	88	89†	86
Delayed	59	73*	73*	74*
Overall no vomiting	63	80*	81*	78*
Acute	86	91‡	91§	88
Delayed	63	80*	81*	78*
Overall no significant nausea	58	60	59	61
Overall no nausea	35	38	33	39
Acute	71	66	64	67
Delayed	35	38	33	39
Overall complete protection	50	54	52	57
Overall total control	33	37	32	38

Abbreviation: IV, intravenous.
*$P < .0001$ *v* control arm.
†$P = .0545$ *v* control arm.
‡$P = .0428$ *v* control arm.
§$P = .0131$ *v* control arm.

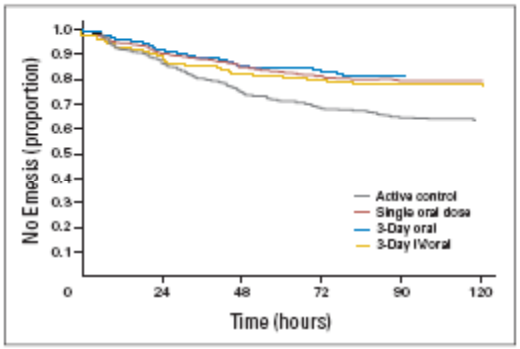


Fig 3. Kaplan-Meier estimate for time to first emetic event. *P* values were less than .0001 for all casopitant arms compared with the control arm. IV, intravenous.

Herrstedt et al., *J Clin Oncol* 2009; 32(27): 5363-5369.

Background

Effectiveness of a single-day three-drug regimen of dexamethasone, palonosetron, and aprepitant for the prevention of acute and delayed nausea and vomiting caused by moderately emetogenic chemotherapy

Steven M. Grunberg · Matthew Dugan · Hyman Muss · Marie Wood · Susan Burdette-Radoux · Tracey Weisberg · Marisa Siebel

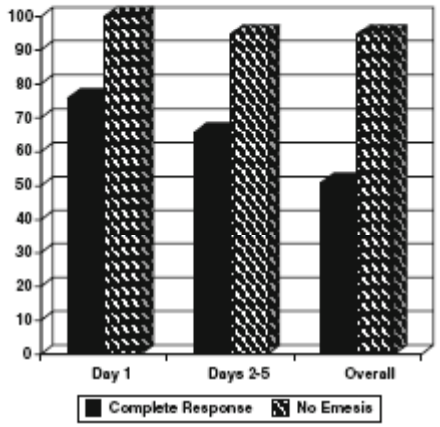


Fig. 1 Percent of patients with Complete Response (no vomiting episodes and no rescue medication) or No Emesis (no vomiting episodes) during the acute (Day 1) and delayed (Days 2–5) periods

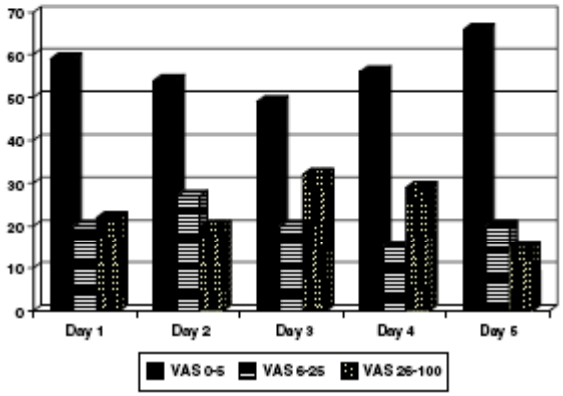


Fig. 2 Percent of patients with various levels of nausea during each day of the study period as determined using a 100-mm Nausea Visual Analogue Scale (VAS). VAS≤5 is considered to represent No Nausea, VAS≤25 is considered to represent No Significant Nausea, and VAS > 25 is considered to represent Significant Nausea

Background

- However, barriers exist to delivery of prophylactic antiemetics during definitive chemoradiation

Background

- However, barriers exist to delivery of prophylactic antiemetics during definitive chemoradiation

Preliminary Studies

- Supportive care as a whole is costly, both on the state and the national levels.

Linda S. Elting
Ya-Chen Tina Shih

The economic burden of supportive care of cancer patients

Table 2 Estimates of the cost of conditions (*NA* not available)

Group	References	Condition	Cost estimates (2002 US $)		
			Range out- and inpatient[a]	Mean inpatient[b]	95% Confidence Limits
Myelosuppression	1, 8, 9, 11, 12, 19, 21, 23, 25, 28, 31, 32, 34, 37, 38, 40, 43, 59	Neutropenia (with or without infection)	2,228–15,867	9,316	8,522–10,110
		Thrombocytopenia	1,169–13,836	9,244	7,573–10,915
		Anemia	269–380	8,328	7,600–9,057
Anemia	4, 15, 16, 32, 35, 36, 42, 49, 52	Anemia of cancer	197–15,614	4,580	3,710–5,450
Mucositis	26, 50, 54, 60	Stomatitis	3,053–4,179	7,985	6,164–9,806
		Esophagitis		6,530	5,514–7,546
		XRT-induced colitis		13,823	5,906–21,741
Thromboembolic disease	2, 10, 22, 26, 41, 47	Deep vein thrombosis	1,584–19,840	6,277	5,993–6,561
		Pulmonary embolus	5,715	7,394	6,678–7,998
Infections	18, 30, 44, 51, 53, 56, 57, 58, 61, 62, 63, 64	Bacteremia	18,641	9,516	8,473–10,559
		Pneumonia	5,418–17,586	8,915	8,727–9,103
		Fever of unknown origin	673–12,823	6,883	6,446–7,320
		Other documented infections	1,312–3,011	7,813	7,622–8,004
Metabolic	17, 55	Vomiting	1,278–4,319	4,629	3,930–5,328
		Dehydration		4,494	4,347–4,641
Hemorrhage	13, 14, 35, 45, 63	Gastrointestinal	162–7,501	7,918	7,507–8,330
		Pulmonary	NA	8,481	7,249–9,713
		Cerebral	8,966	20,387	19,161–21,711
		Bladder	NA	8,500	7,835–9,166
		Others	3,367–9,288	7,799	7,093–8,505
Symptoms	29, 58, 65	Diarrhea	2,512	6,616	5,255–7,977
		Fatigue	NA	8,448	7,694–9,201
		Pain	2,373 – 11,866	7,761	7,648–7,874

[a] Based on reports in the literature
[b] Based on 557,281 inpatient claims from statewide registry

Elting et al., *Support Care Cancer* 2004; 12: 219-226.

Preliminary Studies

- Care of patients with uncontrolled chemotherapy-induced N/V (CINV) is more costly than that with CINV
  - Uncontrolled CINV accounts for a large percentage of monthly direct medical costs

Preliminary Studies

Costs of Uncontrolled Chemotherapy-Induced Nausea and Vomiting Among Working-Age Cancer Patients Receiving Highly or Moderately Emetogenic Chemotherapy

Ya-Chen Tina Shih, PhD
Ying Xu, MD, MS
Linda S. Elting, DrPh

Section of Health Services Research, Department of Biostatistics, Division of Quantitative Sciences, University of Texas M. D. Anderson Cancer Center, Houston, Texas.

TABLE 2
Comparisons of Monthly Medical Costs Between the Uncontrolled and Controlled CINV Groups

Cost Categories	Uncontrolled CINV	Controlled CINV	*P*
Total costs	$10,720 ($7829)	$8923 ($7459)	<0.0001
Chemotherapy	$4685 ($3939)	$4333 ($4448)	.0003
Treatments of chemo-related adverse events			
Neutropenia	$389 ($1241)	$345 ($1477)	.0006
Blood products	$7 ($134)	$1 ($18)	.7280
G-CSF	$89 ($710)	$76 ($419)	.0479
Other costs	*$5551 ($5441)*	*$4168 ($4800)*	*<.0001*
Uncontrolled CINV	$1383		

CINV indicates chemotherapy-induced nausea and vomiting.

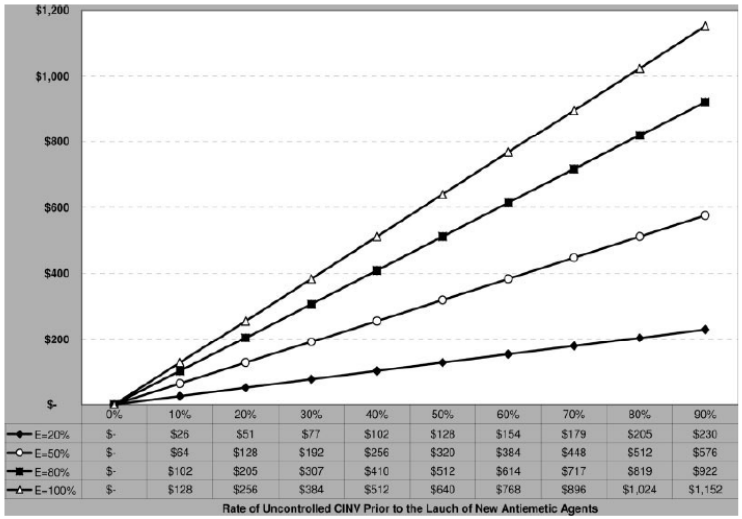
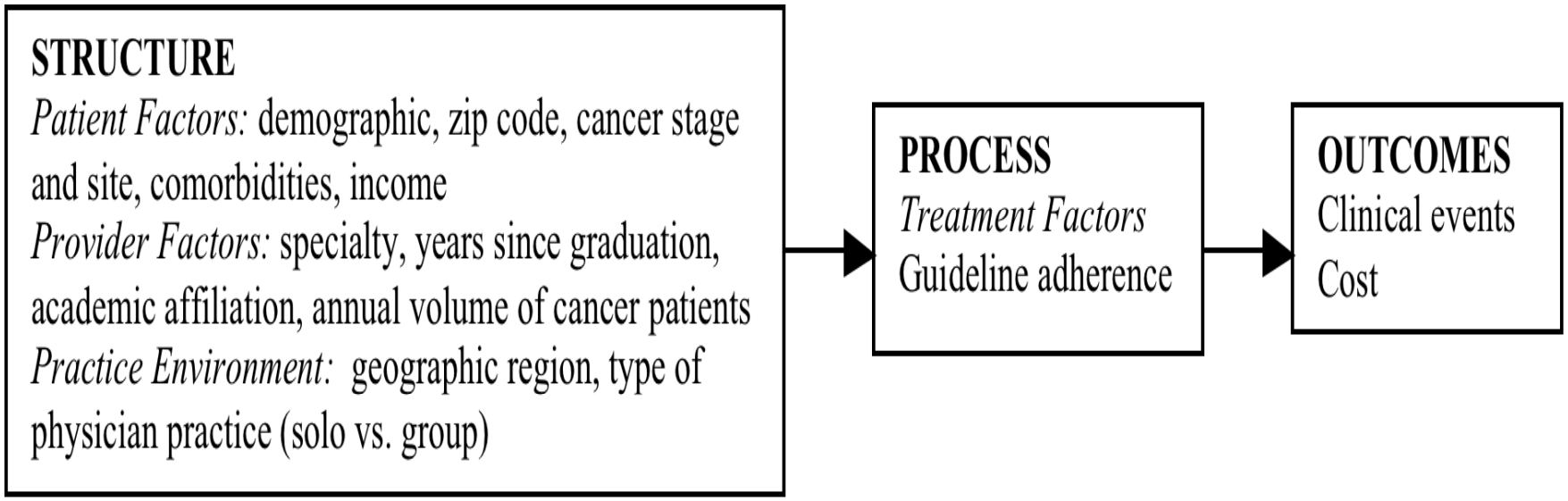


FIGURE 1. Threshold prices of hypothetical new antiemetics under various sensitivity analyses scenarios. E, effectiveness of the new antiemetics in reducing the rate of uncontrolled chemotherapy-induced nausea and vomiting (CINV).

Research Design/Methods

- Conceptual Framework



Research Design/Methods

- Data Source – CERCIT Database
  - Texas Cancer Registry
  - Medicare
  - Medicaid
  - Census data for Texas residents
  - Provider characteristics from American Medical Association (AMA) masterfile

Research Design/Methods

- Study population

Variable	Data Source	Description	Included Population
Date of Diagnosis	TCR	Month and year of diagnosis	2001-2007
Type of Cancer	TCR	Breast, lung, colorectal, prostate, pancreas, non-Hodgkin's lymphoma	Lung Cancer
Stage of Disease	TCR	SEER Summary Stage	Local or Regionally Advanced
Surgery Primary Site	TCR	As first treatment (yes/no)	No surgery as first treatment
Chemotherapy	TCR	As first treatment (yes/no)	Yes (within 12 months of diagnosis)

Other criteria – Continuous Medicare coverage for 3 months prior and one year after diagnosis. No HMO coverage.

Research Design/Methods

- Sample Size
  - Texas Cancer Registry Estimates 22,602 patients ≥65 years old with lung cancer between 2001 and 2007
  - SEER Estimates – 50% of patients with local or regional disease – 11,307 patients
  - Vast majority of patients with platinum based regimens – approximately 85-90% - **9,607 patients for study**

Research Design/Methods

- Sample Size (cont.)
  - **Aim 1** – With 1300 patients per year, able to estimate adherence rate within 0.027 percentage points (95% confidence).
    - 100% power to detect 10% change in adherence rate and >70% power to detect 5% change (Pearson's χ^2 test)
  - **Aim 2** – Multiple logistic regression modeling with 9600 observations achieves>90% power at 0.05 significance to detect 5% change in rate
  - **Aim 3** – Assuming large deviations in cost (Shih et al.), with 9600 observations can estimate mean cost +/- $150 with 95% confidence

Specific Aim 1 – Estimate percentage of patients with guideline adherent care

- **Identifying guidelines**
  - Used year-appropriate National Comprehensive Cancer Network (NCCN) guidelines for emesis prophylaxis between 2001 and 2007

Specific Aim 1 – Estimate percentage of patients with guideline adherent care

Emetogenic Potential of Single Chemotherapy Agents

Level	Frequency of Emesis (%) [a]	Agent
5	> 90%	Carmustine > 250 mg/m² Cisplatin ≥ 50 mg/m² Cyclophosphamide > 1,500 mg/m² Dacarbazine Mechlorethamine Streptozocin
4	60%–90%	Busulfan > 4 mg/kg/d Carboplatin Carmustine ≤ 250 mg/m² Cisplatin < 50 mg/m² Cyclophosphamide > 750 mg/m² to ≤ 1,500 mg/m² Cytarabine > 1 g/m² Doxorubicin > 60 mg/m² Methotrexate > 1,000 mg/m² Procarbazine (oral)
3	30%–60%	Asparaginase Cyclophosphamide ≤ 750 mg/m² Cyclophosphamide (oral) Doxorubicin 20–60 mg/m² Epirubicin ≤ 90 mg/m² Hexamethylmelamine (oral) Idarubicin Ifosfamide Irinotecan Methotrexate 250–1,000 mg/m² Mitoxantrone < 15 mg/m²
2	10%–30%	Capecitabine Cytarabine (low dose) Docetaxel Doxorubicin (liposomal) Etoposide 5-Fluorouracil < 1,000 mg/m² Gemcitabine Methotrexate > 50 mg/m² to < 250 mg/m² Mitomycin Paclitaxel Rituximab Temozolamide Topotecan
1	< 10%	Bleomycin Busulfan Chlorambucil (oral) Cladribine Dexrazoxane Fludarabine Hydroxyurea Melphalan Methotrexate ≤ 50 mg/m² Pentostatin Thioguanine (oral) Vinblastine Vincristine Vinorelbine

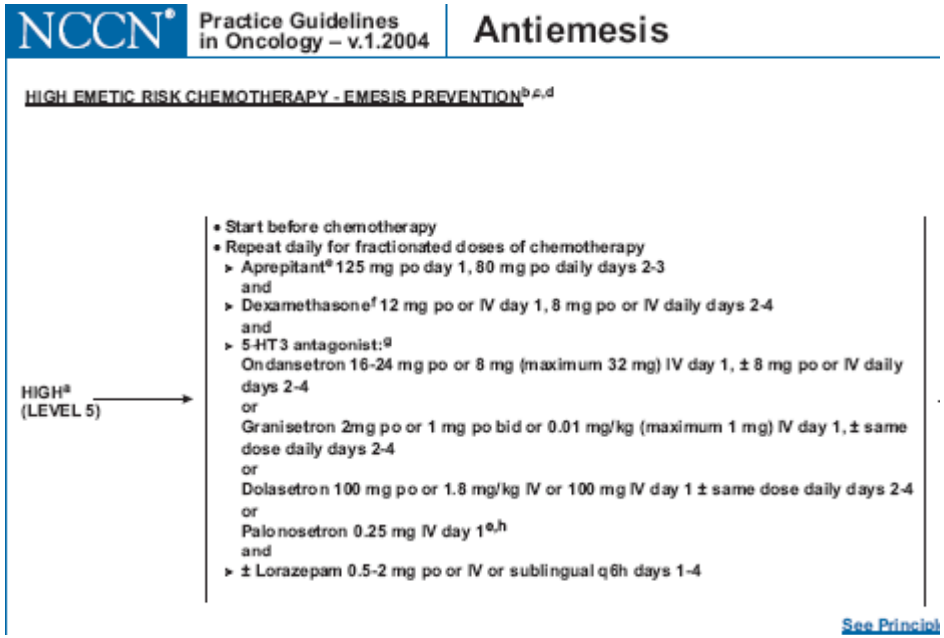
Specific Aim 1 – Estimate percentage of patients with guideline adherent care

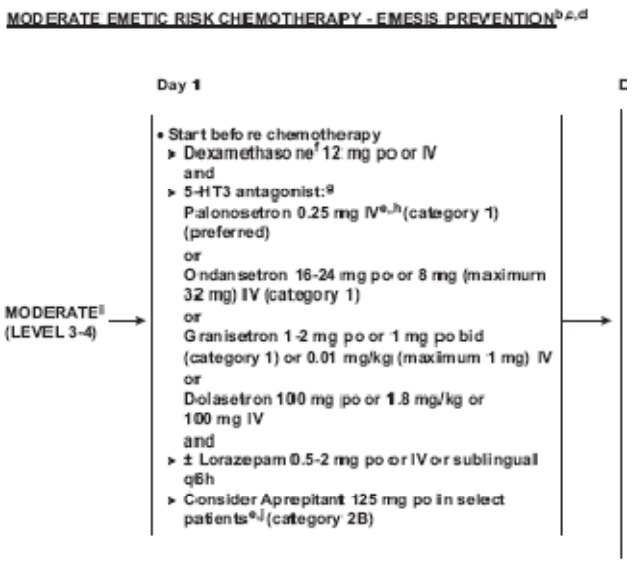
NCCN® Practice Guidelines in Oncology – v.1.2001

Chemotherapy-induced nausea/vomiting:

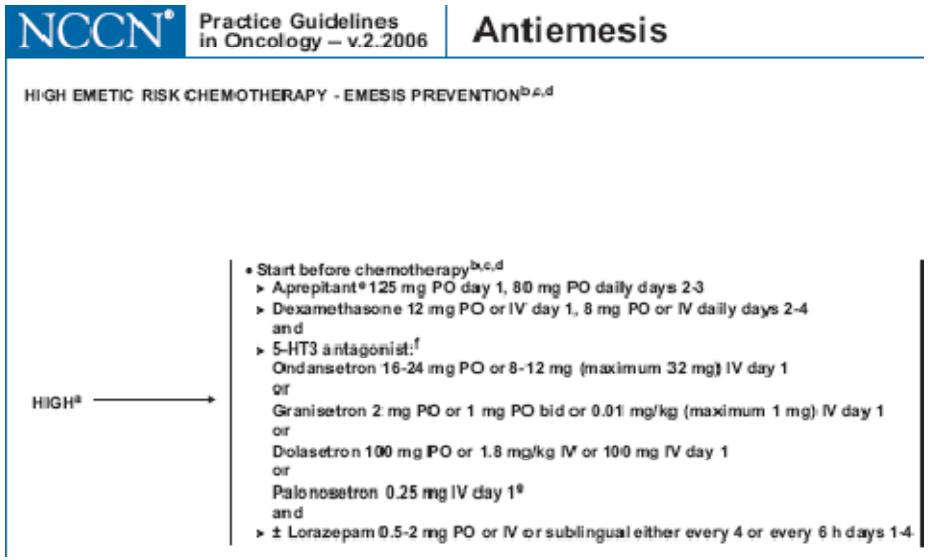
	DAY 1
High to moderate (levels 3-5) →	**Oral form tolerated:** • Start before chemotherapy • Repeat daily for fractionated doses of chemotherapy › Granisetron, 2mg po qd or 1 mg po bid (category 1) or › Ondansetron, 8 mg po bid (category 1) or 16-24 mg po qd (for high) or › Dolasetron, 100 mg po qd (for high: category 1) › + Dexamethasone, 20 mg po › ± Lorazepam, 0.5-2 mg po q6h **Oral form Not tolerated:** › Ondansetron, 8 mg (maximum, 32 mg) IV (category 1) or › Granisetron, 10μ/kg (maximum, 1 mg) IV (category 1) or › Dolasetron, 1.8 mg/kg IV 100 mg IV (category 1) › + Dexamethasone, 20 mg IV › ± Lorazepam, 0.5-2 mg IV q6h

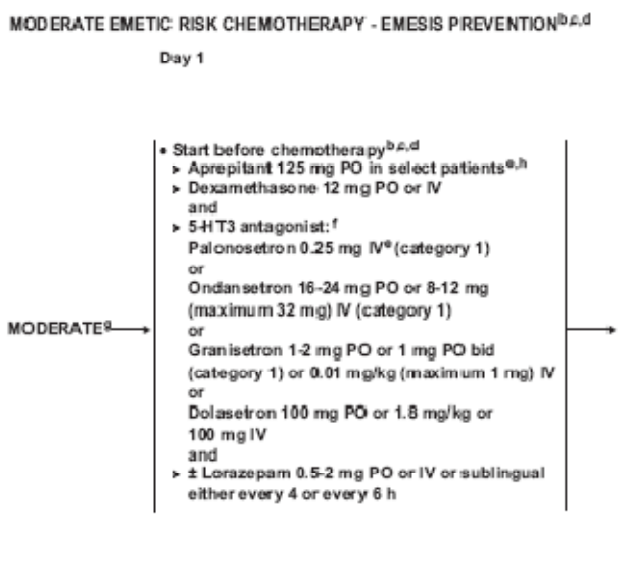
Specific Aim 1 – Estimate percentage of patients with guideline adherent care





Specific Aim 1 – Estimate percentage of patients with guideline adherent care





Specific Aim 1 – Estimate percentage of patients with guideline adherent care

- Identifying relevant drug information with CPT codes

Medication	CPT Code(s)
Neurokinin-1 Antagonists (aprepitant)	J1453 (injection), J8501 (oral)
Ondansetron	J2405 (injection), Q0179, S0181 (oral)
Granisetron	J1626 (injection), S0091, Q0166 (oral)
Dolasetron	J1260 (injection), Q0180, S0174 (oral)
Palonosetron	J2469 (injection)
Dexamethasone	J1094, J1100 (injection), J8540, S0173 (oral)

Note: Claims extracted from physician supplier and outpatient files in Medicare and Medicaid. Under Medicare, these medications are reimbursed under Part B and thus not subject to restrictions under Part D.

Specific Aim 1 – Estimate percentage of patients with guideline adherent care

Year	If Cisplatin (J9060, J9062), Need to have Delivered xxx Antiemetic	If Carboplatin (J9045), Need to have Delivered xxxx Antiemetic
2001	(J2405, Q0179, S0181, J1626, S0091, Q0166, J1260, Q0180, S0174) + (J1094, J1100, J8540, S0173)	Same as Cisplatin
2002	(J2405, Q0179, S0181, J1626, S0091, Q0166, J1260, Q0180, S0174) + (J1094, J1100, J8540, S0173)	Same as Cisplatin
2003	(J2405, Q0179, S0181, J1626, S0091, Q0166, J1260, Q0180, S0174) + (J1094, J1100, J8540, S0173)	Same as Cisplatin
2004	(J1453,J8501) + (J2405, Q0179, S0181, J1626, S0091, Q0166, J1260, Q0180, S0174, J2469) + (J1094, J1100, J8540, S0173)	(J2405, Q0179, S0181, J1626, S0091, Q0166, J1260, Q0180, S0174, J2469) + (J1094, J1100, J8540, S0173)
2005	(J1453,J8501) + (J2405, Q0179, S0181, J1626, S0091, Q0166, J1260, Q0180, S0174, J2469) + (J1094, J1100, J8540, S0173)	(J2405, Q0179, S0181, J1626, S0091, Q0166, J1260, Q0180, S0174, J2469) + (J1094, J1100, J8540, S0173)
2006	(J1453,J8501) + (J2405, Q0179, S0181, J1626, S0091, Q0166, J1260, Q0180, S0174, J2469) + (J1094, J1100, J8540, S0173)	Same as Cisplatin
2007	(J1453,J8501) + (J2405, Q0179, S0181, J1626, S0091, Q0166, J1260, Q0180, S0174, J2469) + (J1094, J1100, J8540, S0173)	Same as Cisplatin

Specific Aim 1 – Estimate percentage of patients with guideline adherent care

- **Definitions/Assumptions**
- "Adherent" defined as binary variable (yes/no)
- Assess delivery of appropriate agent within one day of chemotherapy (one day before or after)
- Given that other agents in HER category are not used in lung cancer, assessed adherence based on platinum agents (expected to be used in at least 80-90% of patients)
- Cisplatin >50 mg/m^2 utilized in multiple national trials, and routinely at MDACC, assumed that patients received this dose

Specific Aim 2 – Identify patient, provider, and area factors included in the CERCIT database

- **Patient, Provider, and Area Factors in CERCIT Database**

Variable	Data Source	Description
Patient Characteristics		
Age	MCARE, MCAID, INS	Age at beginning of cohort year
Gender	TCR, MCARE, MCAID, INS	Male/female linkage variable
Race/Ethnicity	TCR, MCARE, MCAID	Non-Hispanic Black, Hispanic, Non-Hispanic White, Other
Comorbidity	MCARE, MCAID, INS	Klabunde adaptation of Charlson comorbidity score
Place of Residence	MCARE, MCAID, INS	Zip code, county, and state at end of first quarter of year of diagnosis
Income	Census	Median household income of zip code
Education	Census	%<12 years of education of zip code
Practice and Provider Characteristics		
Specialty	AMA, MCARE, MCAID, INS	Includes General Practitioner, Family Physician, Internist, Gynecologist, Geriatrician, Medical Oncologist, Radiation Oncologist, Surgeon
Board Certification	AMA	Board certified in specialty (yes/no)
Type of Practice	AMA	Solo vs. group vs. multi-specialty group vs. other
Location of Practice	AMA	Urban vs. Rural
Years since Graduation	AMA	Difference between year of first relevant claim and year of graduation
Academic Affiliation	AMA	Teaching (yes/no)
Annual Volume of Cancer Patients	MCARE	Number of unique cancer patients seen by physician in prior year

Specific Aim 2 – Identify patient, provider, and area factors included in the CERCIT database

- Will add these potential explanatory and predictive variables to a multivariate model
- Will account for second order interactions of these variables within this time period
- In doing so, will test for significant differences in adherence rates among provider and patient subsets of the population
- Will account for changes in adherence rates over time in these subsets

Specific Aim 3 – Describe the clinical and economic outcomes of adherence to guidelines including N/V events, dehydration, hospital stays, and cost

- Based on results of Aim 1, will then use ICD 9 diagnosis codes to determine which patients experienced an “event”
- Have defined ICD 9 codes of interest: nausea, vomiting, dehydration, electrolyte abnormality
  - 787.01, 787.03, 276.5, 276.0-276.4, and 276.7-276.9

Specific Aim 3 – Describe the clinical and economic outcomes of adherence to guidelines including N/V events, dehydration, hospital stays, and cost

- By accessing claims data (Medicare, Medicaid), will sum payments reflected in these claims from initiation of treatment until 3 months after completion of treatment
- Will also sum:
  - Number of office visits
  - Number of ER visits
  - Number of ICU visits
  - Number of hospital visits
  - Number of hospital inpatient days

Specific Aim 3 – Describe the clinical and economic outcomes of adherence to guidelines including N/V events, dehydration, hospital stays, and cost

- Will compare two endpoints between adherent and non-adherent care
  - Clinical
    - Clinic/ER/ICU/hospital visits
  - Costs
    - Medicare/Medicaid
    - Costs estimated by summing all costs during observation period and computing mean total cost with 95% CI, for both adherent and non-adherent care

Preliminary Results

- From TCR

R1: Dx 2001-2007				
R1	**Frequency**	**Percent**	**Cumulative Frequency**	**Cumulative Percent**
0	109	0.34	109	0.34
1	31762	99.66	31871	100.00

R2:Regional/Localized				
R2	**Frequency**	**Percent**	**Cumulative Frequency**	**Cumulative Percent**
0	25708	80.66	25708	80.66
1	6163	19.34	31871	100.00

Questionable variable

R4:Chemotherapy as first treatment				
R4	**Frequency**	**Percent**	**Cumulative Frequency**	**Cumulative Percent**
0	22309	70.00	22309	70.00
1	9562	30.00	31871	100.00

Preliminary Results

R6: No surgery as first treatment				
R6	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0	6768	21.24	6768	21.24
1	25103	78.76	31871	100.00

Questionable variable

R7:Part A,B and no HMO 6 mos prior dx and up to 1 yr post dx				
R7	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0	24	0.08	24	0.08
1	31847	99.92	31871	100.00

Utilizing all variables, approximately 28,181 patients from TCR

Preliminary Results

- From claims data, a total of 5161 patients receiving cisplatin or carboplatin
  - 4373 with carboplatin
  - 788 with cisplatin

Treatment year	Diagnosis year							
	2001	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**Total**
2001	617	0	0	0	0	0	0	617
2002	83	578	0	0	0	0	0	661
2003	0	104	686	0	0	0	0	790
2004	0	0	102	677	0	0	0	779
2005	0	0	0	89	687	0	0	776
2006	0	0	0	0	116	684	0	800
2007	0	0	0	0	0	81	657	738
Total	700	682	788	766	803	765	657	5161

Preliminary Results

- Patient Characteristics

Sex	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Male	2933	56.83	2933	56.83
Female	2228	43.17	5161	100.00

Medicare Race				
RACE	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Unknown	2	0.04	2	0.04
White	4475	86.71	4477	86.75
Black	428	8.29	4905	95.04
Other	26	0.50	4931	95.54
Asian	38	0.74	4969	96.28
Hispanic	183	3.55	5152	99.83
N. Am. Native	9	0.17	5161	100.00

Variable	N	Mean	Std Dev	Minimum	Maximum
age at treatment	5161	73.66	5.14	66.01	93.50

Preliminary Results

- Adherent Care by Service Year

Carboplatin

service year	adherence				
	No		Yes		Total
	N	%	N	%	
2001	247	47.87%	269	52.13%	516
2002	234	40.77%	340	59.23%	574
2003	240	35.77%	431	64.23%	671
2004	296	45.75%	351	54.25%	647
2005	214	32.87%	437	67.13%	651
2006	691	100.00 %	0	0.00%	691
2007	621	99.68%	2	0.32%	623
Total	2543	58.15%	1830	41.85%	4373

Cisplatin

service year	adherence				
	No		Yes		Total
	N	%	N	%	
2001	58	57.43%	43	42.57%	101
2002	36	41.38%	51	58.62%	87
2003	27	22.69%	92	77.31%	119
2004	132	100.00%	0	0.00%	132
2005	125	100.00%	0	0.00%	125
2006	108	99.08%	1	0.92%	109
2007	115	100.00%	0	0.00%	115
Total	601	76.27%	187	23.73%	788

Preliminary Results

Year	Antiemetic Group		
	1	**2**	**3**
01-03	(J2405, Q0179, S0181, J1626, S0091, Q0166, J1260, Q0180, S0174)	(J1094, J1100, J8540, S0173)	N/A
04-07	(J1453,J8501)	(J2405, Q0179, S0181, J1626, S0091, Q0166, J1260, Q0180, S0174, J2469)	(J1094, J1100, J8540, S0173)
04-05	(J2405, Q0179, S0181, J1626, S0091, Q0166, J1260, Q0180, S0174, J2469)	(J1094, J1100, J8540, S0173)	N/A

Carboplatin

servic	Antiemetic combinations				
e year	**. .**	**. 2**	**1 .**	**1 2**	**Total**
2001	71	7	169	269	516
2002	86	13	135	340	574
2003	99	10	131	431	671

servic	Antiemetic combinations				
e year	**. .**	**. 2**	**1 .**	**1 2**	**Total**
2004	111	82	103	351	647
2005	97	5	112	437	651

servic	Antiemetic combinations							
e year	**. . .**	**. . 3**	**. 2 .**	**. 2 3**	**1 . .**	**1 2 .**	**1 2 3**	**Total**
2006	76	5	110	497	1	2	0	691
2007	58	9	94	455	1	4	2	623

Preliminary Results

Cisplatin

service year	Antiemetic combinations				
	. .	. 2	1 .	1 2	Total
2001	19	2	37	43	101
2002	17	2	17	51	87
2003	12	2	13	92	119

service year	Antiemetic combinations							
	. . .	. . 3	. 2 .	. 2 3	1 . .	1 2 .	1 2 3	Total
2004	36	24	11	61	0	0	0	132
2005	12	4	15	91	2	1	0	125
2006	10	0	18	78	2	0	1	109
2007	16	1	15	71	9	3	0	115
Total	74	29	59	301	13	4	1	788

Preliminary Results

- Conclusion from preliminary data, Aim 1:
  - We found that compliance with national guidelines for prophylactic antiemetics in the setting of lung cancer is suboptimal
    - Rates of approximately 0% for SPAs

Preliminary Results

- Conclusion from preliminary data, Aim 1:
  - We found that compliance with national guidelines for prophylactic antiemetics in the setting of lung cancer is suboptimal
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WHY???

Limitations/Obstacles

- Questions/Issues with Project
  - 1) Expected 9600 patients, captured 5100: Are we capturing all of patients that received platinum-based regimens
    - 20% is lower than expected
  - 2) Is it reasonable to assume cisplatin dose of 50 mg/m^2 or greater?
    - Would significantly change results in 2004-2005
  - 3) Are we capturing all patients that received SPAs?
    - Expect low number (not routinely used at MDACC), but 0% is lower than expected
  - 4) Should patients be filtered further:
    - NSCLC only, radiation therapy, other categories?
    - Will this data be reliable, and would it improve quality of project?
  - 5) How can we accomplish Aim 2 and 3 with no patients receiving SPAs?

Limitations/Obstacles

- Are we capturing all patients with chemotherapy?
- Of 28,181 patients, looked at number of patients who had any claims code or chemo administration code:

chemo_admin	Frequency	Percent	Cumulative Frequency	Cumulative Percent
No	23747	84.27	23747	84.27
Yes	4434	15.73	28181	100.00

		Chemo administration		
		No	Yes	Total
Claim chemo agent	No	22436	441	22877
	Yes	1311	3993	5304
	Total	23747	4434	28181

The maximum number of patients with either of these codes: **5745 (5304 + 441)**

Limitations/Obstacles

- Also looked at 28,181 patients at subject level to determine the percentage of patients that had at least one of most common agents in lung cancer:
  - Cisplatin
  - Carboplatin
  - Docetaxel
  - Etoposide
  - Gemcitabine
  - Irinotecan
  - Paclitaxel
  - Pemetrexed
- A total of 5767 patients (approximately 20%) received at least one of eight agents.
- **WOULD EXPECT MUCH HIGHER PERCENTAGE**

Future Directions

- Submitted abstract to CPRIT conference with Aim 1
- After resolving questions/issues, will complete aims 2 and 3 and write manuscript
- Can do similar analysis with SEER Medicare Database
- **If find low compliance of SPAs with no change in outcomes (Aim 3), should guidelines be changed?**

Acknowledgments

- Linda Elting, Ph.D.
- Kai-Ping Liao, Ph.D.
- Benjamin Smith, M.D.
- Hoang Nguyen, Ph.D.