

Transitioning Inpatient Chemotherapy to the Outpatient Setting

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Off-Label Use Disclosure(s)

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Objectives

Review process implementation for managing transition of inpatient chemotherapy to the outpatient setting

Summarize metrics for evaluating outcomes for transitioning to outpatient chemotherapy

Question #1

Which of these chemotherapy regimens would you consider for routine inpatient chemotherapy?

1. FOLFOX
2. Gemcitabine + Nab-Paclitaxel
3. Gemcitabine + Oxaliplatin
4. R-EPOCH
5. R-ESHAP

Why Transition Chemotherapy to the Outpatient Setting?

Cost of chemotherapy

- Inpatient/Outpatient Billing

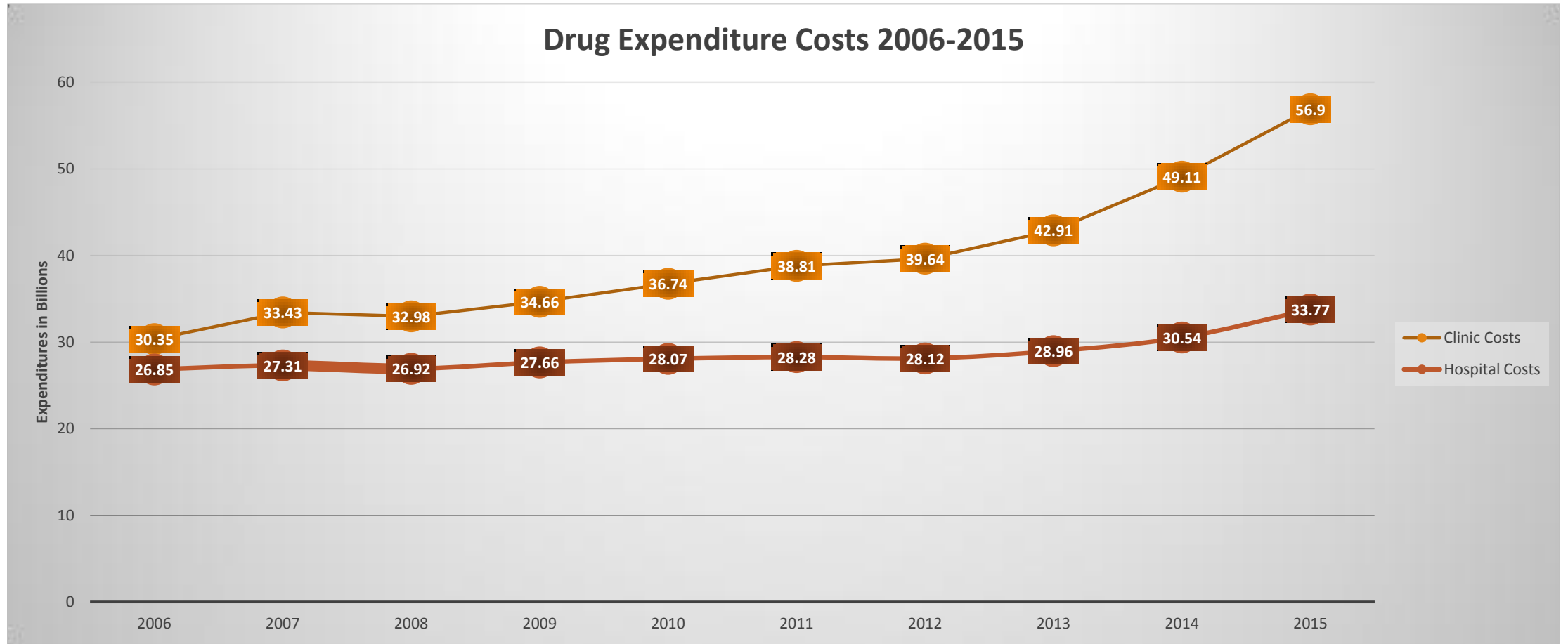
Inpatient bed crunch

Patient assistance programs

Billing for waste

Patient satisfaction

Cost of Chemotherapy



Drug Expenditures in 2015

Top 10 Drugs Categories in Clinic Expenditures for 2015	2015 Expenditures (Billions)	Top 10 Drug Expenditures Clinics	2015 expenditures (Billions)	Top 10 Drug Categories in Nonfederal Hospitals for 2015	2015 expenditures (Billions)	Top 10 Drugs by Expenditures in Nonfederal Hospitals in 2015	2015 Expenditures (Billions)
Antineoplastic agents	17.23	Infliximab	3.28	Antineoplastic Agents	5.85	Infliximab	1.04
Blood Factors	7.24	Pegfilgrastim	2.98	Hemostatic Modifiers	3.07	Rituximab	1.01
Biologicals	6.01	Rituximab	2.46	Antiinfectives, systemic	2.72	Pegfilgrastim	0.85
Gastrointestinal agents	4.36	Epoetin alfa	2.46	Blood Factors	2.03	Immune globulin	0.83
Antiviral agents	2.48	Bevacizumab	2.38	Biologicals	1.85	Alteplase	0.73
Immunologic agents	2.03	Trastuzumab	1.92	Gastrointestinal agents	1.82	Natalizumab	0.7
Ophthalmic Preparations	1.87	Pneumococcal vaccine	1.82	Immunologic agents	1.49	Daptomycin	0.64
Miscellaneous	1.83	Ranibizumab	1.52	Antiviral drugs	1.3	Bevacizumab	0.62
Musculoskeletal agents	1.57	Denosumab	1.35	Hospital Solutions	1.19	Pneumococcal vaccine	0.62
Hemostatic modifiers	1.52	Pemetrexed	0.95	Respiratory Therapy Agents	1.13	Trastuzumab	0.51

Cost for an Inpatient Bed Stay

United States

1. State/local government hospitals — \$1,878
2. Nonprofit hospitals — \$2,289
3. For-profit hospitals — \$1,791

Arizona

State/local government hospitals — \$2,089

Non-profit hospitals — \$2,474

For-profit hospitals — \$2,035

Inpatient versus Outpatient Reimbursement

INPATIENT REIMBURSEMENT

Inpatient chemotherapy, often considered a financial loss

Payment falls under DRG*

Lack of reimbursement with high-cost therapies

Inability to bill for waste

Inability to access patient assistance for patients

OUTPATIENT REIMBURSEMENT

Based on a “Buy and Bill” philosophy

Eligible institutions may be able to purchase therapies under 340B

Charging for waste

Patient assistance programs

* Diagnosis-Related Group

Comparison of Advantages between Outpatient and Inpatient Chemotherapy Administration

Advantages of Outpatient Chemotherapy	Advantages of Inpatient Chemotherapy
Allows for safe, easy drug administration	Critical management of patients during chemotherapy who may need or require constant monitoring during and post-treatment
Respects patient's wish to avoid hospitalization	Induction chemotherapy for acute leukemia patients
Familiar and "safe" facility enhances patient's physical comfort and psychological well-being	Care of services for autologous and allogeneic transplant patients
Oncologist has direct and immediate control of drug administration	Co-existing medical problems that may require critical monitoring
Assistance immediately available if problems arise	Complex chemotherapy regimens that may require pharmacokinetic evaluation
Decreased overall costs compared to inpatient chemotherapy administration	High-dose methotrexate protocols for leukemia, lymphoma, and sarcoma
Overnight stay avoided (utilization of long-acting CINV prophylaxis, infusion of chemotherapy with home infusion pumps, provisions for mesna infusions at home with ifosfamide chemotherapy orders).	Investigational drug treatments/protocols requiring prolonged pharmacokinetic monitoring
Facilitates "tracking" and control of treatment costs	
Increased access to patient assistance programs , which may decrease out-of-pocket expenses for outpatient chemotherapy, labs, and support for housing	

Justification for Hospitalization for Chemotherapy

1. High-dose cisplatin (75 mg/m² or more)
2. “Special procedure” chemotherapy
3. Induction therapy for acute leukemia
4. Stem cell/bone marrow transplantation with high-dose chemotherapy
5. “High-dosage chemotherapy”
6. Severely emetogenic chemotherapy
7. Ifosfamide therapy
8. Initial dose of chemotherapy while hospitalized
9. High-dose methotrexate protocols
10. If chemotherapy administration is mandatory despite comorbidities

Comments Received from Patients Receiving Chemotherapy Inpatient

I get no sleep when I am admitted so I hate staying inpatient.

I waited eight hours for a bed to get admitted and start chemotherapy the next day.

I have a line attached to my arm for two days for only three days of chemotherapy, why can't I do this outpatient?

I have kids so I do not have the time for an inpatient stay.

The list goes on and on.

Developing a Practice Model for Implementation



Evaluating High-Cost Inpatient Therapies

1. Developed weekly meetings with pharmacy leadership
2. Evaluated trends for inpatient and outpatient chemotherapy
3. Tied this in with the quarterly cancer center business meetings

Evaluation of High-Cost Chemotherapy

Rituximab/Clofarabine

- Patients did not have access to patient assistance programs
- Drug waste could not be billed in the inpatient setting
- Drug replacement programs were not utilized
- Patients often waited until the next day to start chemotherapy

Evaluated Cost Savings Measures

1. Rituximab
 - Often given inpatient
2. Clofarabine
 - Often given inpatient
3. Outpatient Chemotherapy
 - Published in the literature
 - Used at some institutions

Outpatient Chemotherapy

Lymphoma

AML/ALL

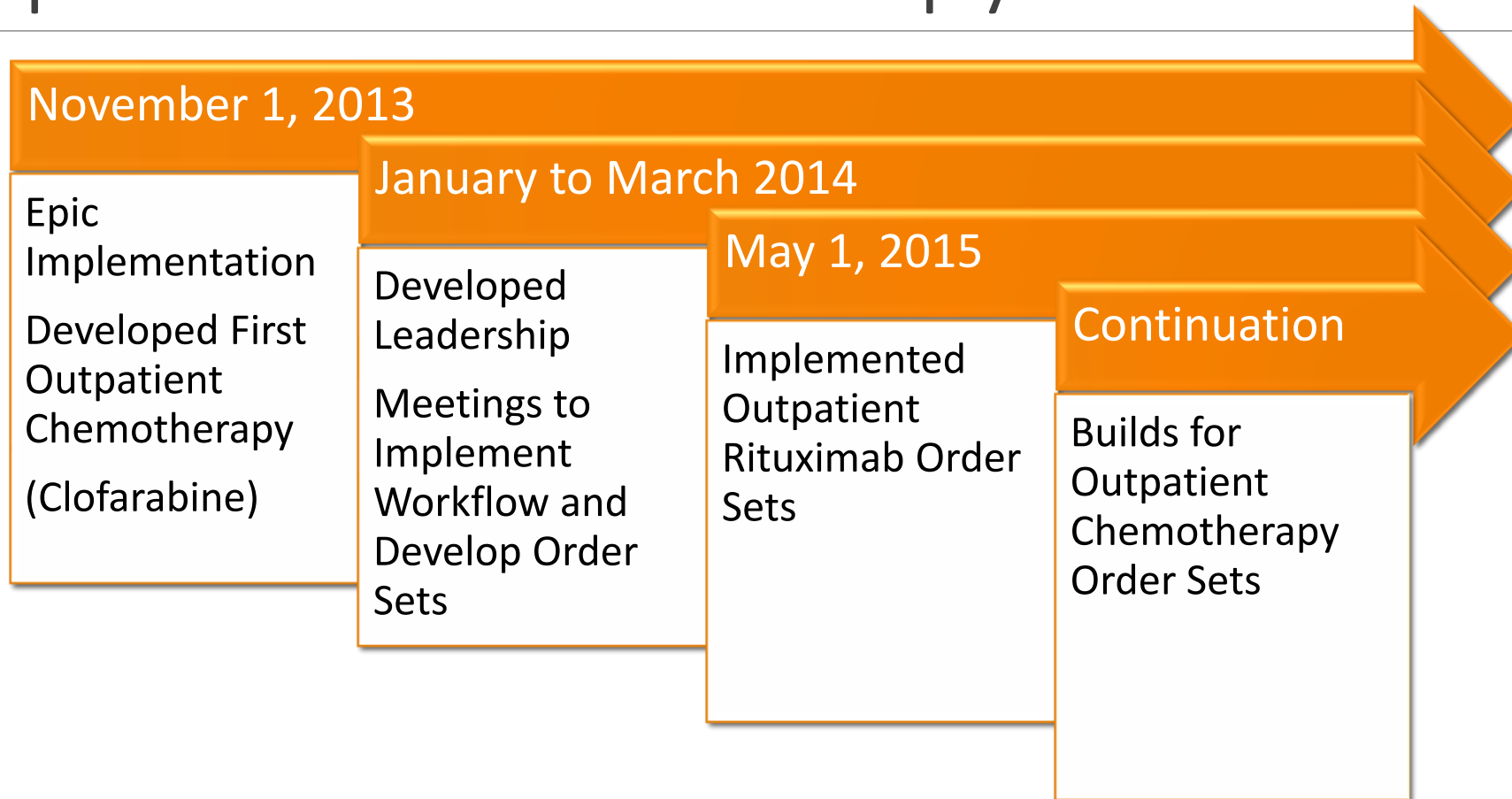
Solid tumor regimens

Transitioning Outpatient Chemotherapy

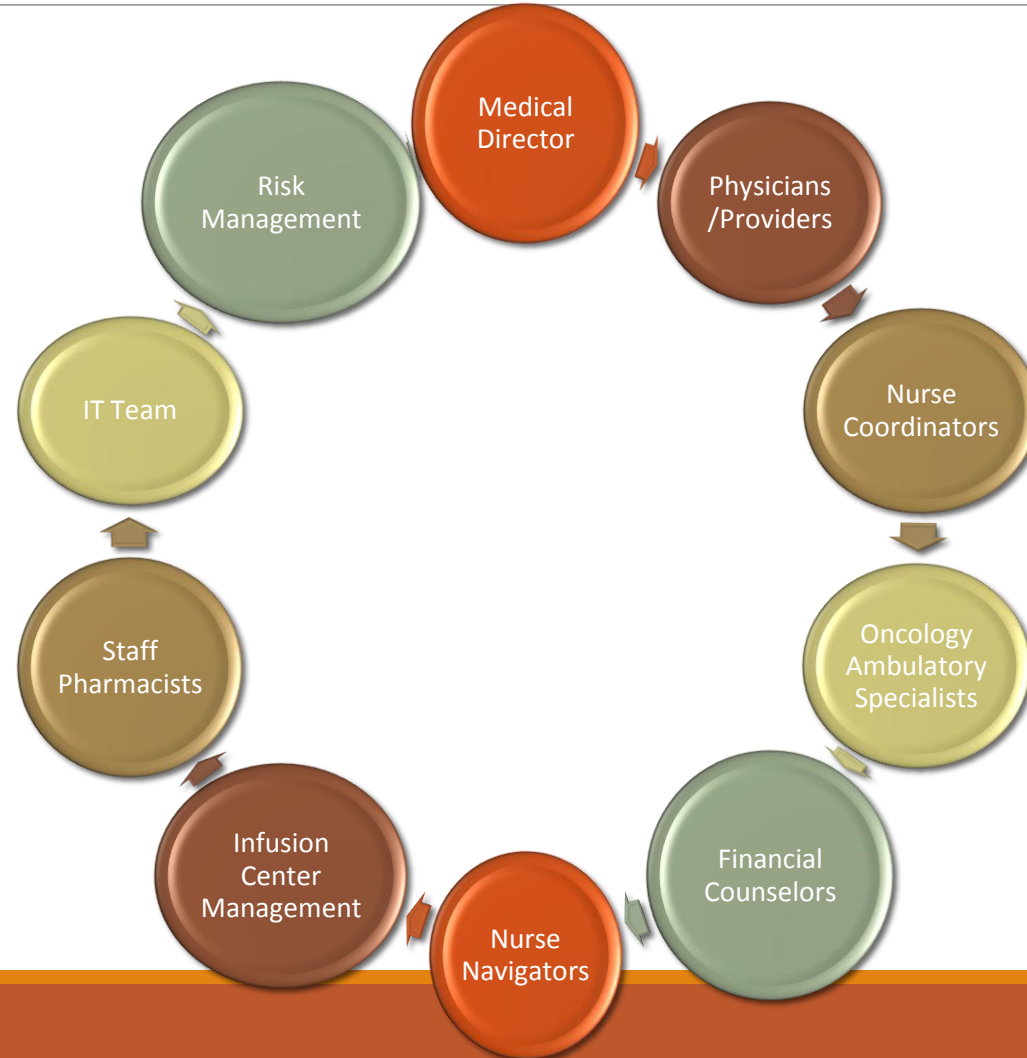
“Buy-in”

- Physicians/advanced practitioners & fellows need to address OP options
- Nurse coordinators in clinic need to evaluate this content for outpatient treatment
- Financial counselors/finance team needs to address outpatient chemotherapy/patient assistance programs and housing assistance
- Clinical pharmacists need to address patients eligible for outpatient chemotherapy

Implementation for Transitioned Outpatient Chemotherapy



Implementation of Transitioning Inpatient Chemotherapy to the Outpatient Setting



Implementation of Transitioning Inpatient Chemotherapy to the Outpatient Setting

Team Member	Positives	Negatives	Resolution of Workflow Issues
Medical Director	Increased patient access, decreased admission times for patients with split dose rituximab, decreased inpatient wait times for beds by decreasing overall inpatient chemotherapy orders	Potential issues with patients who may need to stay inpatient for chemotherapy administration	Patients who need assistance are identified with our social workers during chemotherapy discussions for housing assistance and also transport subsidies
Physicians	Easier to see patients in clinic versus going to the hospital during their stay, less concerns for patient transition of care chemotherapy	Distance for patients, feasibility for patients to attend clinic the next day after discharge, housing issues for long distance patients	We had defined social workers to address housing and also financial counselors working to assist in the process for foundation assistance
Infusion Nurses	Decreased patient load for inpatient nurses, newer treatment options utilized in the outpatient setting	Concerns over drug administration schedules and safety	Clinical pharmacy staff addressed chemotherapy concerns prior to the start of chemotherapy for monitoring parameters and chemotherapy infusion questions
Nurse Coordinators	Options for patients who cannot stay inpatient or do not have caregiver support	Timing for outpatient chemotherapy	Patients would be scheduled either the Friday or Saturday prior to start of chemotherapy to prevent delays, and Clinical Pharmacists would address supportive care medication and pharmacy infusion members prior to the start of outpatient chemotherapy
Risk Management	This would provide increased options of care for patients and increased quality of care and access	None were noted	-

Implementation of Transitioning Inpatient Chemotherapy to the Outpatient Setting

Team Member	Positives	Negatives	Resolution of Workflow Issues
Clinical Pharmacists	Increased opportunity for clinical education on current chemotherapy, increased access to prevent medication discharge issues with supportive medications, increase adherence to supportive care medications, decrease inpatient drug waste	Increased workload for building chemotherapy regimens in the outpatient setting, support services for pumps were also raised as questions	Clinical Pharmacists increased their role as members of their disease team and addressed patient counseling with the physicians and nurse coordinators to coordinate outpatient care. Chemotherapy orders were developed with all parties for infusion services and pumps, chemotherapy order sets and pumps were counseled on by pharmacists and nurses for pump support during chemotherapy
Financial Counselors	Increased patient access to medication assistance programs, decreased workload on financial and scheduling approval for inpatient and outpatient treatment regimens, billable drug waste	Required education on new regimens, reimbursement with outpatient pumps	Financial Counselors were notified by the clinical oncology pharmacists when patients were started on outpatient chemotherapy or split dose rituximab regimens to address patient copay support and also outpatient pump charges for infusion
Staff Pharmacists	Billable drug waste in the outpatient setting, ease of transition for a majority of chemotherapy orders to outpatient	Addressing early start chemotherapy for HiDAC-containing regimens	Infusion center pharmacists were notified of start times for HiDAC containing regimens, cytarabine orders were batched to prevent waste for patients
IT Epic Team	This would be easy to do in Epic with the transition of rituximab after chemotherapy inpatient for rituximab outpatient orders	Outpatient order sets would take some time to develop and would require increased time to develop in the EMR	Clinical oncology pharmacists worked with the IT team, and nurse coordinators and infusion pharmacists alongside physicians in developing the orders to ensure compliance and speed of developing order sets in the EMR

Criteria for Patient Selection for Outpatient Chemotherapy

Outpatient Evaluation

Patient

Location

Transportation

Clinical management

Supportive care management

After-hours care

Question #2

Which of the following regimens does not have data for outpatient treatment?

- A. ICE
- B. EPOCH
- C. HCVAD Mod B
- D. Clofarabine
- E. All of the Above

Rituximab

Majority of chemotherapy was given on inpatient days with inpatient chemotherapy

All of these had pegfilgrastim administered in the outpatient setting day after discharge

Data provided had shown equal efficacy in day of and day after treatment

Transitioned Rituximab Outpatient

Regimen	Disease State	Rituximab Administration Day
CHOP-R	NHL	Day Outpatient Discharge
MiniCHOP-R	NHL	Day Outpatient Discharge
CEOP-R	NHL	Day Outpatient Discharge
CHOEP	NHL	Day Outpatient Discharge
CVP-R	NHL	Day Outpatient Discharge
ICE-R	NHL	Day 4 Outpatient Rituximab
ESHAP-R	NHL	Day 5 Outpatient Rituximab
DHAP-R	NHL	Day 5 Outpatient Rituximab
CVAD-R	NHL	Day 5 Outpatient Rituximab
REPOCH/EPOCH(DA) -R	NHL	Day 5 Outpatient Rituximab
CODOX-M/IVAC-R	Lymphoma	Day Outpatient Discharge
MPV-R	Lymphoma	Day Outpatient Discharge
HCVAD-R	MCL	Day 5
CD20+ ALL Regimens*	ALL	After Discharge

Practice Model Implementation

Physicians had no issues with the change in practice

Decreased inpatient bed stays

Increased utilization with order set implementation

Automatic uptick except for a few patients

Increased adherence to our own site specialty pharmacy

Decreased inpatient costs for chemotherapy

Increased the role and focus of clinical ambulatory oncology pharmacists

Example of Outpatient Rituximab (ICE-R)

Patient authorization

- Inpatient and Outpatient Release

Rituximab often falls on the same day as pegfilgrastim

We had anecdotal decrease in reactions since implementation

- Evaluation still pending

IP/OP HEMATOLOGY NHL R-ICE - Properties		Actions
Prior Authorization - 8/2/2016, Planned	Sign	Actions X
Cycle 1 - 8/3/2016 through 8/16/2016 (14 days), Planned	Sign	Actions X
Inpatient Stay, Cycle 1 - Planned for 8/3/2016 through 8/6/2016	Sign	Actions X
Provider Communication Orders	Sign	Actions X
Labs	Sign	Actions X
Pre-Hydration	Sign	Actions X
Pre-Medications	Sign	Actions X
Chemotherapy	Sign	Actions X
etoposide (VEPESID) 170 mg in sodium chloride 0.9 % 500 mL chemo infusion 100 mg/m ² × 1.7 m ² (Treatment plan BSA) = 170 mg, Intravenous, for 80 Minutes, Every 24 hours, Starting 30 minutes after treatment start time, For 3 doses	Sign	Actions X
CARBOplatin (PARAPLATIN) in sodium chloride 0.9 % 500 mL chemo infusion Intravenous, at 500 mL/hr, for 80 Minutes, Once, Starting S+1, For 1 dose Give on day 2. *Max dose per protocol is 800 mg, dose may need to be adjusted.*	Sign	Actions X
ifosfamide (IFEX) 8,500 mg, mesna (MESNEX) 8,500 mg in sodium chloride 0.9 % 1,000 mL chemo infusion 5,000 mg/m ² × 1.7 m ² (Treatment plan BSA) = 8,500 mg, Intravenous, at 41.7 mL/hr, Once, Starting S+1, For 1 dose	Sign	Actions X
mesna (MESNEX) 5,100 mg in sodium chloride 0.9 % 1,000 mL infusion 3,000 mg/m ² × 1.7 m ² (Treatment plan BSA) = 5,100 mg, Intravenous, at 83.3 mL/hr, for 12 Hours, Once, Starting S+2, For 1 dose Start infusion immediately after completion of ifosfamide/mesna infusion.	Sign	Actions X
Day 5, Cycle 1 - Planned for 8/7/2016	Sign	Actions X
Nursing Orders	Sign	Actions X
Pre-Medications	Sign	Actions X
Therapeutic Medications	Sign	Actions X
nTUXimab (RITUXAN) 637.5 mg in sodium chloride 0.9 % 500 mL chemo infusion 37.5 mg/m ² × 1.7 m ² (Treatment plan BSA) = 637.5 mg, Intravenous, Once, Starting 30 minutes after treatment start time, For 1 dose Start the initial infusion at 50 mg/hour, and increase rate by 50 mg/hour every 30 minutes, if tolerated, up to a maximum rate of 400 mg/hour. If the initial infusion was well tolerated, may start subsequent infusions at 100 mg/hr, and increase rate by 100 mg/hour every 30 minutes, if tolerated, up to a maximum rate of 400 mg/hour.	Sign	Actions X
Supportive Medications	Sign	Actions X
pegfilgrastim (NEULA STA) injection 6 mg 6 mg, Subcutaneous, Once, Starting at treatment start time, For 1 dose	Sign	Actions X

Outpatient Chemotherapy Transition Checklist

- Selected chemotherapy available to be administered outpatient
- Financial approval
 - Infusion pumps covered
- Infusion center hours
 - Current schedule prohibits specific chemotherapy
- Nursing staff
 - Education with nurse coordinators
 - Education with infusion nurses on administration and side effect monitoring
- Pharmacy/specialty pharmacy
 - Education on regimens and supportive care treatments

Infusion Pumps

Key to developing outpatient chemotherapy orders

Addressing pumps for chemotherapy orders

- EPOCH
- VAD
- Cytarabine infusions
- Ifosfamide orders
- Mesna pumps

Evaluate work flow with “Smart Pumps”

- Air in the lines/Extravasation/Irritants/Close system devices

State board of pharmacy laws

Address education with patients/caregiver for pump issues

Clinical Ambulatory Oncology Pharmacists Role in Outpatient Chemotherapy

Ambulatory clinical specialists work to address chemotherapy orders appropriate for inpatient treatment/outpatient treatment

Chemotherapy counseling instituted for all new chemotherapy patients

Direct oral oncolytics and supportive care medications to our specialty pharmacy

Evaluate and monitor chemotherapy orders for continued treatment and dose modifications

Lymphoma Outpatient Chemotherapy

Regimen	Disease State	Chemotherapy Treatment	Chemotherapy Treatment
R-ICE	NHL	<p><u>Day 1</u> Rituximab 375 mg/m² Etoposide 100 mg/m² Ifosfamide 1667 mg/m²/Mesna 1667 mg/m² Mesna Pump 1000 mg/m² over 18 hours</p> <p><u>Day 2</u> Etoposide 100 mg/m² Carboplatin AUC 5 Ifosfamide 1667 mg/m²/Mesna 1667 mg/m² Mesna Pump 1000 mg/m² over 18 hours</p>	<p><u>Day 3</u> Etoposide 100 mg/m² Ifosfamide 1667 mg/m²/Mesna 1667 mg/m² Mesna Pump 1000 mg/m² over 18 hours</p> <p><u>Day 4</u> Pump D/C Neulasta</p>
R-ESHAP	NHL	<p><u>Day 1</u> Rituximab 375 mg/m² Etoposide 40 g/m² Cisplatin 25 mg/m²</p> <p><u>Day 2</u> Methylprednisolone 250 mg Etoposide 40 g/m² Cisplatin 25 mg/m²</p>	<p><u>Day 3</u> Methylprednisolone 250 mg Etoposide 40 g/m² Cisplatin 25 mg/m²</p> <p><u>Day 4</u> Methylprednisolone 250 mg Etoposide 40 g/m² Cisplatin 25 mg/m² Cytarabine 2000 mg/m²</p>
R-DHAP	NHL	<p><u>Day 1</u> Cisplatin 1000 mg/m²</p> <p><u>Day 2</u> Cytarabine 2000 mg/m² q 10 hours</p> <p><u>Day 3</u> Rituximab 375 mg/m² Neulasta</p>	
R-CVAD	NHL	<p><u>Day 1</u> Cyclophosphamide 750 mg/m² Vincristine/Doxorubicin 4 day pump</p>	<p><u>Day 5</u> Pump D/C Neulasta</p>
R-EPOCH /R-EPOCH(DA)	NHL	<p><u>Day 1 -4</u> Pump Doxorubicin 10 mg/m²/ Etoposide 50 mg/m² / Vincristine 0.4 mg/m²</p>	<p><u>Day 5</u> Pump D/C Rituximab 375 mg/m² Cyclophosphamide 750 mg/m²</p>

Example of Outpatient EPOCH Order Set

Monitoring parameters

Hepatitis B labs for rituximab

One set of labs at initiation of chemotherapy

Take-home medications prior to initiation which is evaluated by the clinical ambulatory oncology pharmacist

OP HEMATOLOGY LYMPHOMA EPOCH (DA) – Properties		Sign	Actions	✕	Actions
Prior Authorization – 7/31/2016, Planned					
Day 1, Prior Authorization – Planned for 7/31/2016					
Prior Authorization	Sign	Release	Actions	✕	
Provider Communication Orders	Sign	Release	Actions	✕	
Take-Home Medications	Sign	Release	Actions	✕	
Cycle 1 – 8/1/2016 through 8/21/2016 (21 days), Planned					
Day 1, Cycle 1 – Planned for 8/1/2016					
Labs	Sign	Actions	✕		
Nursing Orders	Sign	Actions	✕		
Provider Communication Orders	Sign	Actions	✕		
Treatment Conditions	Sign	Actions	✕		
Pre-Medications	Sign	Actions	✕		
Chemotherapy	Sign	Actions	✕		
DOXOrubicin (ADRIAMYCIN) 17 mg, etoposide (VEPESID) 96 mg, vinCRiStine (ONCOVIN) 0.68 mg in sodium chloride 0.9 % 500 mL chemo infusion Intravenous, Over 24 hours, Starting 30 minutes after treatment start time, For 1 dose Follow vesicant precautions. Administer through central line only. Patient to return every 24 hours for a pump refill.					
Day 2, Cycle 1 – Planned for 8/2/2016					
Day 3, Cycle 1 – Planned for 8/3/2016					
Day 4, Cycle 1 – Planned for 8/4/2016					
Day 5, Cycle 1 – Planned for 8/5/2016					
Nursing Orders	Sign	Actions	✕		
Pre-Medications	Sign	Actions	✕		
Chemotherapy	Sign	Actions	✕		
cytophosphamide (CYTOXAN) 1,275 mg in sodium chloride 0.9 % 500 mL chemo					

Leukemia Outpatient Chemotherapy

Regimen	Disease State	Chemotherapy Treatment
5+2	AML	<u>Day 1</u> -3 Daunorubicin 60 mg/m ² Cytarabine 100 mg/m ² CIVI 24 hours <u>Day 4</u> -5 Cytarabine 100 mg/m ² CIVI 24 hours <u>Day 6</u> Pump D/C
FLA/FLAG	AML	<u>Day 1</u> -5 Fludarabine 30 mg/m ² Cytarabine 2 g/m ² Growth Factor added on for Days 1-5 for FLAG
ME/MEC	AML	<u>Day 1</u> -5 Mitoxantrone 10 mg/m ² /d iv Etoposide 100 mg/m ² /d iv
HIDAC [^]	AML	<u>Day 1</u> ,3,5 Cytarabine 3g/m ² IV every 10hrs [^] Dose reduced for age
Clofarabine or Clofarabine/HiDAC	AML/ALL	<u>Day 1</u> -5 Clofarabine 40 mg/m ²

Solid Tumor Regimens

Regimen	Disease State	Chemotherapy
VIP	Testicular Cancer	<p><u>Day 1</u> -5 Ifosfamide 1200mg/m²/ Mesna 240 mg/m² Etoposide 100 mg/m² Cisplatin 25 mg/m² Mesna Pump 720 mg/m²</p> <p><u>Day 6</u> Pump D/C Neulasta</p>
VeIP	Testicular Cancer	<p><u>Day 1-2</u> Vinblastine 0.11 mg/kg Ifosfamide 1200mg/m²/ Mesna 240 mg/m² Cisplatin 20 mg/m² Mesna Pump 720 mg/m²</p> <p><u>Day 3-5</u> Ifosfamide 1200mg/m²/ Mesna 240 mg/m² Etoposide 100 mg/m² Cisplatin 20 mg/m² Mesna Pump 720 mg/m²</p> <p><u>Day 6</u> Pump D/C Neulasta</p>
TIP	Testicular Cancer	<p><u>Day 1</u> Palitaxel 250 mg/m²</p> <p><u>Day 2</u> -5 Cisplatin 25 mg/m² Ifosfamide 1500 mg/m² / Mesna 300 mg/m² Mesna 900 mg/m²</p> <p><u>Day 6</u> Pump D/C Neulasta</p>

Metrics to Evaluate

“If I can’t measure it, I can’t manage it.”

- *Peter Drucker*

Outpatient Chemotherapy Metrics

1. High-cost chemotherapy inpatient
 1. Rituximab
 2. Clofarabine
2. Transitioned chemotherapy outpatient/inpatient
3. Inpatient bed days stay
4. Medication assistance programs
5. Additional metrics
 1. Febrile neutropenia admissions
 2. Emergent room visits
 3. Time to inpatient start
 4. Length of time for each day of outpatient chemotherapy
 5. Outcomes

Metrics with EHR

Electronic health care record

- Epic

Built automatic reports for transitioned chemotherapy

- Outpatient Rituximab

Built reports for outpatient chemotherapy orders

Reports on chemotherapy duration for inpatient chemotherapy

Rituximab Transitioned Chemotherapy

	Inpatient Rituximab (Nov 1, 2013 April 30, 2014)	Outpatient Rituximab (Nov 1, 2013 April 30, 2014)	Inpatient Rituximab (May 2014 - May 2016)	IP/OP Outpatient Rituximab (May 2014 - May 2016)	OP Outpatient Rituximab (May 2014 - May 2016)
Chemotherapy Treatment Regimens	35	4	9	137	46
Patients	23	4	7	53	15
Diagnosis					
NHL/ALL/BH	21/1/1	4/0/0	6/0/0	49/8/0	15/0/0
Lymphoma					
CHOP/ First Dose CHOP	10/9	0	2/2	6/6	N/A
CVP/ First Dose CVP	0	0	1/1	1/1	N/A
CEOP/ First Dose CEOP	0	0	0	1/1	N/A
Mini-CHOP/ First Dose Mini-CHOP	0	0	0	1/1	N/A
EPOCH	3	2	1	39	37
ICE	13	2	1	26	4
ESHAP	0	0	0	0	0
DHAP	3	0	0	9	3
GIFOX	0	0	0	2	0
CVAD	0	0	0	2	2
Codox/IVAC	1	0	0	9	N/A
Rituximab	0	0	3	0	N/A
bortezomib/Ibrutinib	1	0	0	0	N/A
HD-MTX/HD Ara-C/Thiotepa	0	0	0	2	N/A
MPV	0	0	0	12	N/A
HD MTX/ARA-C	0	0	0	4	N/A
MTX/VCR	1	0	0		N/A
HCVAD	1	0	0	15	N/A
ALL					
Larson/HCVAD	0/1	0/0	0/0	1/7	N/A

Transitioned Rituximab to Outpatient Summary

Benchmark goal for implementation was 90% outpatient administration

Transitioned 35 Inpatient versus 137 rituximab patients treated outpatient

Inpatient rituximab savings >\$925,000

Average inpatient day stay decreased by ~9 hours

- Rituximab was often administered the next day in the morning

Unrealized reimbursement potential outpatient treatment

Automatic billing for waste with rituximab

Developing Proposed Restrictions for Rituximab

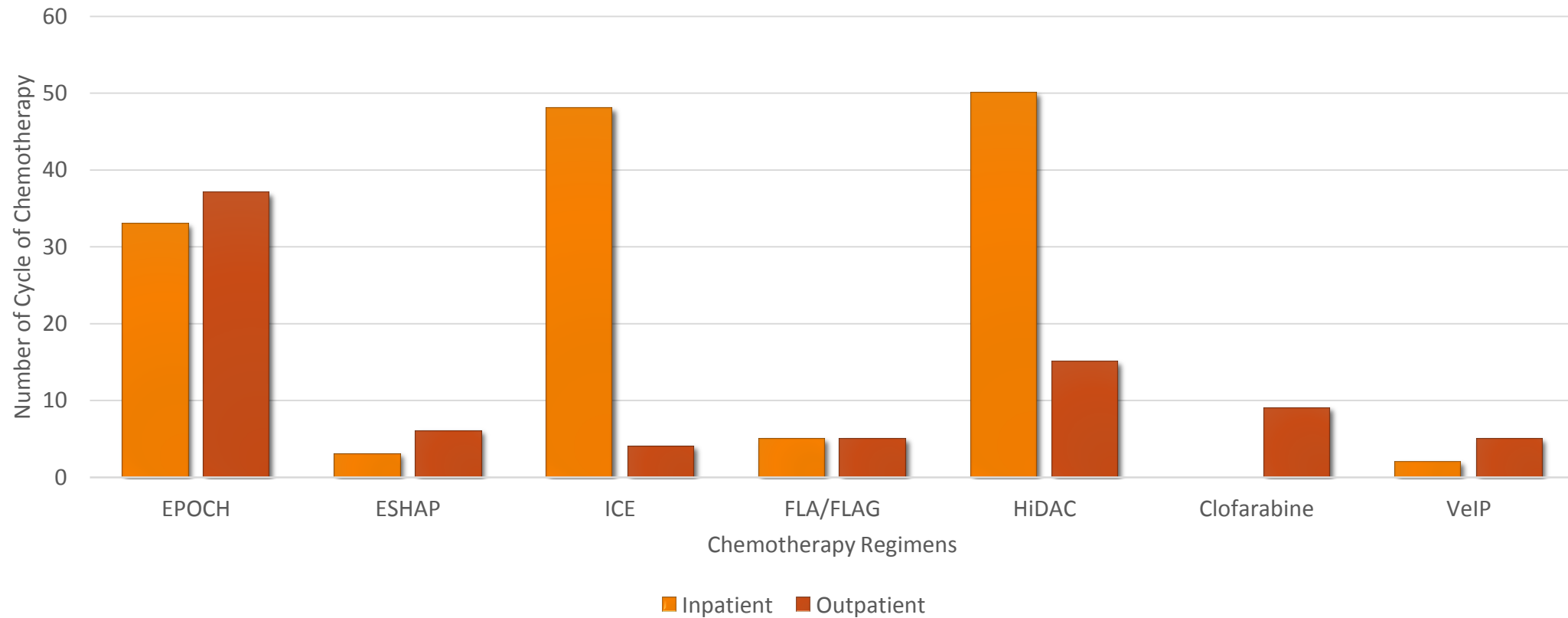
Rituximab Restrictions for Inpatient Oncology Use

- Immune Thrombocytopenic Purpura (ITP)[^] - dose reduced rituximab 100 mg
- Cold Agglutinin Disease
- Post-Transplant Lymphoproliferative Disease (PTLD)
- Auto-Immune Hemolytic Anemia (AIHA)
- Prolonged chemotherapy inpatient stays requiring continued treatment

Transitioned Outpatient Chemotherapy

Diagnosis	Treatments	Patients	Inpatient Average Bed Stay hours (UACC)	Inpatient Bed Days Saved Days (UACC)	
Lymphoma	56	19		Inpatient Bed Days Saved	
R+/-DHAP	3	1	47.3	5.9125	
R+/-EPOCH	37	9	133.5	205.8125	
R+/-ICE	4	2	133	22.16666667	
R+/-IGEV	2	1	120	10	
R+/-ESHAP	6	3	122	30.5	
R+/-CVAD	2	2	127.18	10.59833333	
VIPD	2	1	96	8	
Rituximab OP Cost Savings					\$401,431
AML Regimens	35	15			
ME	1	1	156	6.5	
FLA	5	4	192	40	
HiDAC	15	6	190	118.75	
Clofarabine	7	4	161.4	47.075	
Clofarabine/HiDAC	2	2	160	13.33333333	
Clofarabine Cost Savings					\$575,269.7
Solid Tumor Regimens	10	5			
VeIP	5	2	744	155	
TIP	4	2	104.5	17.41666667	
VIP	1	1	139.5	5.8125	
Total Outpatient Regimens Administered	91	39			
Total Inpatient Days Saved					696.8775

Comparison of Inpatient to Outpatient Chemotherapy Regimens



Transitioned Outpatient Chemotherapy

Benchmarked at 50% for chemotherapy outpatient implementation

Transitioned 56 chemotherapy regimens to the outpatient setting

Transitioned >\$ 400,000 rituximab to outpatient

Transitioned > \$575,000 clofarabine to outpatient

Inpatient bed days saved total over 696

Underutilized ICE regimens for OP use

Reimbursement changes to outpatient still being evaluated

Medication Assistance Program

Current workflow for medication assistance programs was changed

Since 2016, developed financial counselors to evaluate up-front patient assistance evaluations on all patients

Each of our patients have a tallied amount for our accounts for patient assistance provided

Over 30 patients received assisted housing for local treatments

Rituximab cost savings for our chemotherapy yield over

- 10 patients totaling \$26,000 worth of copay support

Clofarabine

- No patients required copay assistance

Future Outpatient Chemotherapy

Chemotherapy

HCVAD Mod A

DCEP

VTD-PACE

GIFOX

Transitioning Outpatient Transplant Conditioning Regimens

Thiotepa/Carmustine*

Melphalan

BEAM

BEC

Takeaway Points

1. Always involve your financial team!!!
2. Nurse education is critical if not key
3. Team approach works best to develop this practice model for chemotherapy
4. Clinical ambulatory oncology pharmacists are key in this process for selection of patients and patient adherence with supportive care medications
5. Spend time with your infusion staff on pumps to address potential issues

Summary

1. Evaluate implementation for outpatient chemotherapy
 - Overall costs may become pivotal in the era of a future of DRG based payments (OCM[^])
2. Bring key players to the table to address concerns and mitigate issues before they happen
3. Develop a stepwise plan for implementation
4. Make sure you pick the right patient for outpatient chemotherapy

Questions

