

A large, modern glass-walled building with a curved facade, identified as the Froedtert Cancer Center. The building is situated behind a green lawn and a body of water with reeds in the foreground. The sky is overcast.

Transitioning Inpatient Chemotherapy to The Outpatient Setting

MARY FOURNOGERAKIS, BSN, RN, OCN
FROEDTERT HOSPITAL
MILWAUKEE, WISCONSIN

FEBRUARY 11TH, 2023

Financial Disclosure(s)

- I do not have any financial relations to disclose

Objectives

- Identify benefits of outpatient care
- What is need to be successful
- Examples of regimens transitioned to outpatient

Benefits of Outpatient Care

1

Cost Savings

2

Quality of Care

3

Quality of Life

Cost Savings

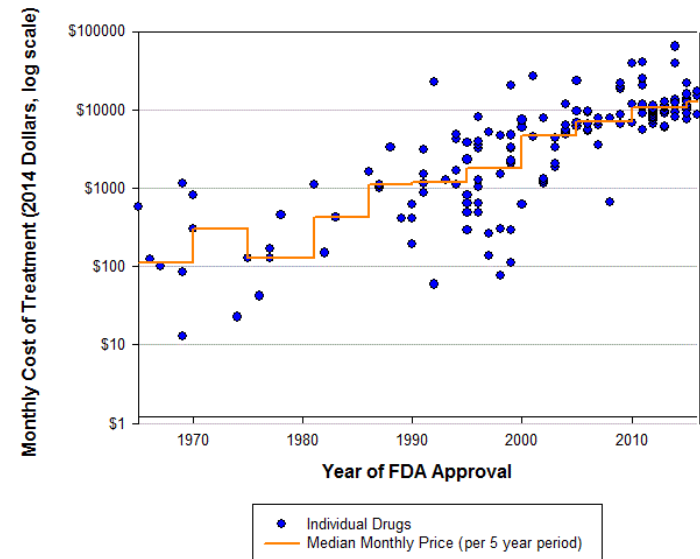
Inpatient Billing

- Based on diagnosis-related groups

Outpatient Billing

- “Fee for Service”
- Medication cost based on 340B drug pricing
- Patient assistance programs

Monthly and Median Costs of Cancer Drugs at the Time of FDA Approval
1965-2016



Source: Peter B. Bach, MD, Memorial Sloan Kettering Cancer Center

Average Cost of an Inpatient Bed Stay

	United States	Wisconsin
State/local government hospitals	\$2,742	\$3,621
Nonprofit hospitals	\$3,013	\$2,704
For-profit hospitals	\$2,296	\$2,850

<https://www.kff.org/health-costs/state-indicator/expenses-per-inpatient-day-by-ownership/?currentTimeframe=0&sortModel=%7B%22colId%22:%22Location%22,%22sort%22:%22asc%22%7D> (2021)

Quality of Care

- Shorter length of stay decreases a patient's risk of
 - Acquiring an infection
 - Medication side effects
 - Deconditioning

Quality of Life

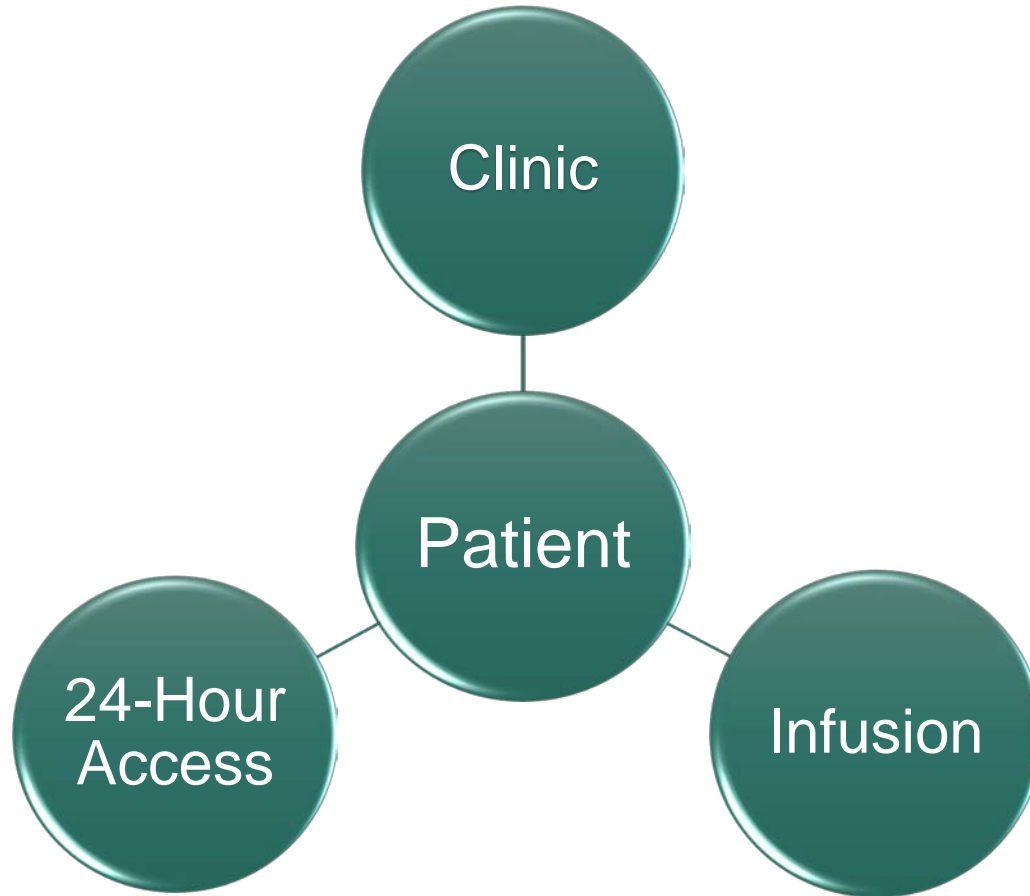
“I don’t get any sleep when admitted”

“I didn’t even start chemotherapy on the day I was admitted”

“Sleep in my own bed”

“Eat my own food when I want to”

To Be Successful



Criteria for Patient Selection

Criteria	Evaluation
Patient	<ul style="list-style-type: none">• Be able to understanding treatment plan and supportive management• Be compliant/adherent• Have a caregiver present at appointments
Location	<ul style="list-style-type: none">• Live within approximately 45 minutes of infusion site
Transportation	<ul style="list-style-type: none">• Have reliable transportation to and from appointments
Access to medication	<ul style="list-style-type: none">• Have treatment/supportive medications prior to starting treatment

Clinic

MD

- Signs orders
- Provides supportive management & follow-up

RN

- Provides education
- Coordinates treatment schedule and follow-up
- Provides supportive management

Pharmacist

- Provides education
- Prepares treatment plan
- Reviews medication authorizations
- Completes medication reconciliation
- Monitor adherence

Infusion

Infusion RN

- Knowledgeable in treatment plan & medications
- Administers treatment
- Educates on home infusion pumps
- Monitor for side effects and toxicities

Leadership

- Offers extended hours

24-Hour Access

- RN triage phone line
- 24-hour clinic
- Emergency room (ER)
 - ER provider has access to the oncology team

High-Dose Cytarabine (HiDAC)

- HiDAC 1.5-3.0 g/m² every 12 hours
- Days 1,2,3 with pegfilgrastim or its biosimilar on day 5
- Requires:
 - Extended infusion hours
 - Labs drawn up to 5 days prior to day 1
 - Cerebellar assessment for toxicity monitoring

HiDAC Patient Calendar

Lab Appt @ _____	Day 1	Day 2	Day 3	Day 4 and 5
Doctor Appt @ _____	AM Appt @ _____ PM Appt @ _____	AM Appt @ _____ PM Appt @ _____	AM Appt @ _____ PM Appt @ _____	G-CSF Appt @ _____
<input type="checkbox"/> Please fill your prescriptions (eye drops, medication to prevent infection and medication to prevent nausea) prior to starting your chemotherapy	<p style="text-align: center;">AM</p> <input type="checkbox"/> Take Ondansetron and Dexamethasone , put in eye drops prior to leaving for day hospital <input type="checkbox"/> Chemotherapy over 2 hours <input type="checkbox"/> Labs will be drawn prior to discharge from day hospital <input type="checkbox"/> Verify PM appt time with your nurse <p style="text-align: center;">PM</p> <input type="checkbox"/> Take Ondansetron prior to leaving for day hospital <input type="checkbox"/> Chemotherapy over 2 hours <input type="checkbox"/> Put in eye drops before bed	<p style="text-align: center;">AM</p> <input type="checkbox"/> Take Ondansetron and Dexamethasone , put in eye drops prior to leaving for day hospital <input type="checkbox"/> Chemotherapy over 2 hours <input type="checkbox"/> Labs will be drawn prior to discharge from day hospital <input type="checkbox"/> Verify PM appt time with your nurse <p style="text-align: center;">PM</p> <input type="checkbox"/> Take Ondansetron prior to leaving for day hospital <input type="checkbox"/> Chemotherapy over 2 hours <input type="checkbox"/> Put in eye drops before bed	<p style="text-align: center;">AM</p> <input type="checkbox"/> Take Ondansetron and Dexamethasone , put in eye drops prior to leaving for day hospital <input type="checkbox"/> Start antimicrobials today as prescribed <input type="checkbox"/> Chemotherapy over 2 hours <input type="checkbox"/> Labs will be drawn prior to discharge from day hospital <input type="checkbox"/> Verify PM appt time with your nurse <p style="text-align: center;">PM</p> <input type="checkbox"/> Take Ondansetron prior to leaving for day hospital <input type="checkbox"/> Chemotherapy over 2 hours <input type="checkbox"/> Verify your G-CSF appointment with your nurse <input type="checkbox"/> Put in eye drops before bed	<p style="text-align: center;">AM</p> <input type="checkbox"/> Take Ondansetron and put in eye drops <input type="checkbox"/> At G-CSF appt (typically will be on day 5), verify future lab and possible transfusion appt dates and times with your nurse <p style="text-align: center;">PM</p> <input type="checkbox"/> Take Ondansetron and put in eye drops (You will take medications to prevent infection until directed to stop by doctor (Acyclovir, Fluconazole, and Levofloxacin))

Liposomal Daunorubicin and Cytarabine (CPX-351)

- Daunorubicin 44 mg/m² and Cytarabine 100 mg/m²
- Induction: Days 1,3,5
- Requires:
 - Daily preemptive check-in visits
 - Alternating RN phone visits with RN/MD/APP clinic visits
 - Prophylactic antimicrobials
 - 24-hour access to oncology team
 - Low threshold to admit

Hyper-CVAD

Cycles 1, 3, 5, 7 (A)

- Cyclophosphamide 300 mg/m² IV over 2 hours every 12 hours for 6 doses
- Mesna 600 mg/m²/day continuous infusion on days 1-3
- Vincristine
- Doxorubicin 50 mg/m² IV on day 4
- Dexamethasone

Cycles 2, 4, 6, 8 (B)

- Methotrexate 200 mg/m² IV over 2 hours followed by 800 mg/m² IV over 22 hours on day 1
- Cytarabine 3 g/m² (1 g/m² for patients older than 60 years) IV over 2 hours every 12 hours for 4 doses starting on day 2
- Leucovorin 25 mg PO q 6 hours starting 12 hours after methotrexate infusion
 - Dose adjusted based on MTX level
 - Until levels are <0.1 µmol/L
- Dexamethasone

Hyper-CVAD

- More selective patient criteria due to complexity
 - Required to receive one cycle of A and B inpatient
- Provided with:
 - Oral home medication calendar
 - IV medication calendar
 - Urine pH instructions, log and supplies
- Teaching overwhelming, especially for B cycle (high dose Methotrexate)
 - Homework sheets provided for each day of treatment
 - Clinic RN provides day 1 sheet, infusion RN reviews/collects & provides next day assignment

Hyper-CVAD B – Patient Calendar

	D-1	D+1	D+2	D+3	D+4	D+5
<p><u>Number of pills for each dose:</u></p> <ul style="list-style-type: none"> Sodium bicarbonate 2600 mg = 4 x 650 mg tabs Leucovorin 25 mg = 5 x 5 mg tabs Leucovorin 15 mg = 3 x 5 mg tabs Ondansetron 8 mg = 1 x 8 mg tab Dexamethasone 12 mg = 3 x 4 mg tabs 	<ul style="list-style-type: none"> <input type="checkbox"/> 6AM: Sodium bicarbonate 2600 mg <input type="checkbox"/> 12PM: Sodium bicarbonate 2600 mg <input type="checkbox"/> 6PM: Sodium bicarbonate 2600 mg <input type="checkbox"/> 12AM: Sodium bicarbonate 2600 mg 	<ul style="list-style-type: none"> <input type="checkbox"/> 6AM: Sodium bicarbonate 2600 mg <input type="checkbox"/> 12PM: Sodium bicarbonate 2600 mg <input type="checkbox"/> 6PM: Sodium bicarbonate 2600 mg <input type="checkbox"/> 12AM: Sodium bicarbonate 2600 mg 	<ul style="list-style-type: none"> <input type="checkbox"/> 6AM: Sodium bicarbonate 2600 mg, ondansetron 8 mg, dexamethasone 12 mg, prednisolone eye drops <input type="checkbox"/> 12PM: Sodium bicarbonate 2600 mg <input type="checkbox"/> 6PM: Sodium bicarbonate 2600 mg, ondansetron 8mg, prednisolone eye drops <input type="checkbox"/> 12AM: Sodium bicarbonate 2600 mg, leucovorin 25 mg [specific leucovorin time TBD by DH RN] 	<ul style="list-style-type: none"> <input type="checkbox"/> 6AM: Sodium bicarbonate 2600 mg, leucovorin 25 mg, ondansetron 8 mg, dexamethasone 12 mg, prednisolone eye drops <input type="checkbox"/> 12PM: Sodium bicarbonate 2600 mg, leucovorin 15 mg <input type="checkbox"/> 6PM: Sodium bicarbonate 2600 mg, ondansetron 8mg, leucovorin 15 mg, prednisolone eye drops <input type="checkbox"/> 12AM: Sodium bicarbonate 2600 mg, leucovorin 15 mg 	<ul style="list-style-type: none"> <input type="checkbox"/> 6AM: Sodium bicarbonate 2600 mg, leucovorin 15 mg, ondansetron 8 mg, dexamethasone 12 mg, prednisolone eye drops <input type="checkbox"/> 12PM: Sodium bicarbonate 2600 mg, leucovorin 15 mg <input type="checkbox"/> 6PM: Sodium bicarbonate 2600 mg, ondansetron 8mg, leucovorin 15 mg, prednisolone eye drops <input type="checkbox"/> 12AM: Sodium bicarbonate 2600 mg, leucovorin 15 mg 	<ul style="list-style-type: none"> <input type="checkbox"/> 6AM: Sodium bicarbonate 2600 mg, leucovorin 15 mg, ondansetron 8 mg, prednisolone eye drops <input type="checkbox"/> 12PM: Sodium bicarbonate 2600 mg, leucovorin 15 mg <input type="checkbox"/> 6PM: Sodium bicarbonate 2600 mg, ondansetron 8mg, leucovorin 15 mg, prednisolone eye drops <input type="checkbox"/> 12AM: Sodium bicarbonate 2600 mg, leucovorin 15 mg
D+6	D+7	D+8	D+9	D+10	D+11	D+12
<ul style="list-style-type: none"> <input type="checkbox"/> 6AM: Sodium bicarbonate 2600 mg, leucovorin 15 mg, ondansetron 8 mg, prednisolone eye drops <input type="checkbox"/> 12PM: Sodium bicarbonate 2600 mg, leucovorin 15 mg <input type="checkbox"/> 6PM: Sodium bicarbonate 2600 mg, ondansetron 8mg, leucovorin 15 mg, prednisolone eye drops <input type="checkbox"/> 12AM: Sodium bicarbonate 2600 mg, leucovorin 15 mg 	<ul style="list-style-type: none"> <input type="checkbox"/> 6AM: Sodium bicarbonate 2600 mg, leucovorin 15 mg, <input type="checkbox"/> 12PM: Sodium bicarbonate 2600 mg, leucovorin 15 mg <input type="checkbox"/> 6PM: Sodium bicarbonate 2600 mg, leucovorin 15 mg, <input type="checkbox"/> 12AM: Sodium bicarbonate 2600 mg, leucovorin 15 mg 	<ul style="list-style-type: none"> <input type="checkbox"/> 6AM: Sodium bicarbonate 2600 mg, leucovorin 15 mg, <input type="checkbox"/> 12PM: Sodium bicarbonate 2600 mg, leucovorin 15 mg <input type="checkbox"/> 6PM: Sodium bicarbonate 2600 mg, leucovorin 15 mg, <input type="checkbox"/> 12AM: Sodium bicarbonate 2600 mg, leucovorin 15 mg 	<ul style="list-style-type: none"> <input type="checkbox"/> 6AM: Sodium bicarbonate 2600 mg, leucovorin 15 mg, <input type="checkbox"/> 12PM: Sodium bicarbonate 2600 mg, leucovorin 15 mg <input type="checkbox"/> 6PM: Sodium bicarbonate 2600 mg, leucovorin 15 mg, <input type="checkbox"/> 12AM: Sodium bicarbonate 2600 mg, leucovorin 15 mg 			

Hyper-CVAD B – Homework Sheet

HyperCVAD: B cycle

Day Before Treatment Begins/1st Day of Treatment

You are responsible for completing the tasks on this list between today and the time you see the nurse in the Day Hospital for treatment. Check off each one as you do it, bring this sheet to your appointment in the Day Hospital, and give it to the nurse caring for you.

Begin on _____, the day before you are scheduled to receive treatment:

D-1 (Date: _____)

- 6AM
 - Take medication: Sodium bicarbonate 2600 mg (4 tablets)
- Morning
 - Check urine pH, record on sheet
- 12PM (noon)
 - Take medication: Sodium bicarbonate 2600 mg (4 tablets)
- Afternoon
 - Check urine pH, record on sheet
- 6PM
 - Take medication: Sodium bicarbonate 2600 mg (4 tablets)
- Evening
 - Check urine pH, record on sheet
- 12AM (midnight)
 - Take medication: Sodium bicarbonate 2600 mg (4 tablets)

D+1 (day of treatment) (Date: _____)

- 6AM
 - Take medication: Sodium bicarbonate 2600 mg (4 tablets)
 - Check urine pH, record on sheet
- 12PM (noon) – during appointment
 - Take medication: Sodium bicarbonate 2600 mg (4 tablets)

BRING TO YOUR NEXT APPOINTMENT

- This sheet (nurse will keep)
- Urine pH log (nurse will return to you)
- Medications to take during your appointment and/or while you are away from home

HyperCVAD: B cycle

2nd to 3rd Day of Treatment

You are responsible for completing the tasks on this list between the time you leave the Day Hospital today and the time you return to the Day Hospital tomorrow for treatment. Check off each one as you do it, bring this sheet to your appointment in the Day Hospital, and give it to the nurse caring for you.

D+2 (Date: _____)

End time of methotrexate: _____

- 6PM (during PM appointment)
 - Take medication: Sodium bicarbonate 2600 mg (4 tablets)
 - Take medication: Ondansetron 8 mg (1 tablet)
 - Take medication: Prednisolone eye drops, 2 drops in each eye
- Evening
 - Check urine pH, record on sheet
- Time: _____ (12 hours (+/- 1 hr) after methotrexate end time)
 - Take medication: **Leucovorin 25 mg (5 pills)**
- 12AM (midnight)
 - Take medication: Sodium bicarbonate 2600 mg (4 tablets)

D+3 (Date: _____)

- 6AM
 - Take medication: Sodium bicarbonate 2600 mg (4 tablets)
 - Take medication: **Leucovorin 25 mg (5 pills)**
 - Take medication: Ondansetron 8 mg (1 tablet)
 - Take medication: Dexamethasone 12 mg (3 tablets)
 - Take medication: Prednisolone eye drops, 2 drops in each eye
 - Check urine pH, record on sheet
- 12PM (noon) (during AM appointment)
 - Take medication: Sodium bicarbonate 2600 mg (4 tablets)
 - **Take medication: Leucovorin 15 mg (3 pills) *Note lower dose than at 6AM***
- 6 PM (during PM appointment)
 - Take medication: Sodium bicarbonate 2600 mg (4 tablets)
 - Take medication: Ondansetron 8 mg (1 tablet)
 - **Take medication: Leucovorin 15 mg (3 pills)**

BRING TO YOUR NEXT APPOINTMENT

- This sheet (nurse will keep)
- Urine pH log (nurse will return to you)
- Medications to take during your appointment and/or while you are away from home

Summary

- Transitioning inpatient chemotherapy regimens to the outpatient is feasible
- Multidisciplinary team is needed to be successful
- Making sure to have chosen the right patient
- Nurse and patient education is crucial

