Going Viral!
Hepatitis C Treatment in the Age of Direct-Acting Antivirals

Michelle T. Martin, PharmD, BCPS, BCACP

Appointments and Disclosures

- Clinical Pharmacist
  - Bobby and Marvin Fink Family Liver Clinic
  - University of Illinois Hospital and Health Sciences System
- Clinical Assistant Professor
  - University of Illinois at Chicago College of Pharmacy
- I have no financial conflicts of interest related to the content of this presentation.
- The live presentation will include additional slides

Learning Objectives

1) Choose a medication regimen for treatment of hepatitis C virus (HCV) for genotypes 1, 2, and 3
2) Recognize the role of the pharmacist in HCV management
3) Discuss the HCV agents in late-stage development
4) Calculate the costs of HCV treatment regimens

Why is HCV a "Hot Topic" Now?

- Updated screening recommendations / increased awareness
- More people have HCV than HIV in the US
- Since 2006 in the US, more people die from HCV than HIV annually
- Aging baby boomers / disease progression
- Expensive medications!

Ly, et al. Ann Intern Med. 2012.

Screening Recommendations

- Patients with a high risk of HCV infection
- Current guidelines recommend that everyone born between 1945 and 1965 get tested for HCV once, regardless of risk factors
  - The CDC updated its guidelines in August 2012
  - The USPSTF updated its guidelines (Grade B) in June 2013
  - AASLD / IDSA / IAS-USA updated their guidelines (Class 1 Level B) in January 2014
  - CMS updated its guidelines June 2014

http://www.cdc.gov/hepatitis/hcv/guidelinesc.htm
http://www.uspreventiveservicestaskforce.org/uspstf/uspshepc.htm
http://www.hcvguidelines.org/
http://www.cms.gov/medicare-coverage-database/details/nca-proposed-decision-memo.aspx?NCAId=272

What is Hepatitis C?

- Single-stranded ribonucleic acid (RNA) virus
- HCV has 6 genotypes with treatment recommendations (7 isolated)
  - 67 subtypes (denoted a, b, etc)
  - Genotypes 1a and 1b most common; ~75% in US:
  - Genotypes 2 and 3 account for ~20-25% in US

McHutchison JG, et al. Am J Manag Care. 2005.
Smith DB, et al. Hepatology. 2014.

Hepatitis C Statistics

- 130-170 million people infected worldwide (2.35%)
- An estimated 4.1 million Americans have HCV
  - Most common chronic bloodborne infection in US
  - Leading reason for liver transplant
  - Leading cause of liver-related death, end-stage liver disease (ESLD), and hepatocellular carcinoma (HCC)
- >16,000 deaths annually in the US (2010)
- Goal of HCV treatment: eradication of HCV infection to prevent complications (cirrhosis, HCC, ESLD and need for liver transplant) and death

CDC. Viral Hepatitis Statistics and Surveillance. 2014.
IOM. Hepatitis and Liver Cancer: A National Strategy for Prevention and Control of Hepatitis B and C. 2010.
Negro F, et al. Liver Int. 2011.
WHO. Hepatitis Factsheet. 2014.

HCV Transmission

High Risk

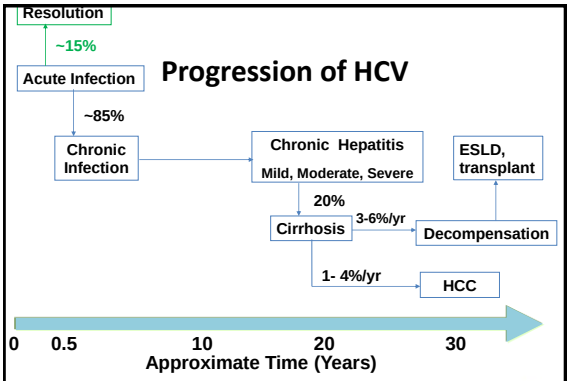
- Intravenous (IV) drug use
- Blood transfusions or solid organ transplants
  - Prior to 1992
- Clotting factors
  - Prior to 1987

Lower Risk

- Hemodialysis
- Intranasal drug use: cocaine, etc
- Occupational exposure
- Tattoos, accupuncture, or body piercing with unsterilized instruments
- Perinatal transmission
- Sexual transmission

Ghany MG, et al. Hepatology. 2009.

Progression of HCV



McHutchison JG, et al. Am J Manag Care. 2005.

Learning Objective 1

- Choose a medication regimen for treatment of hepatitis C virus (HCV) for genotypes 1, 2, and 3

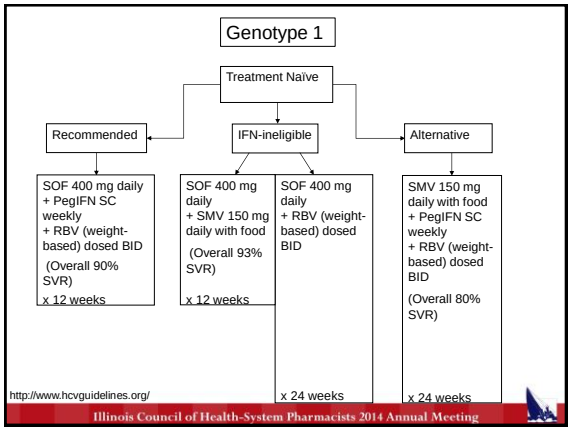
Current HCV Treatment

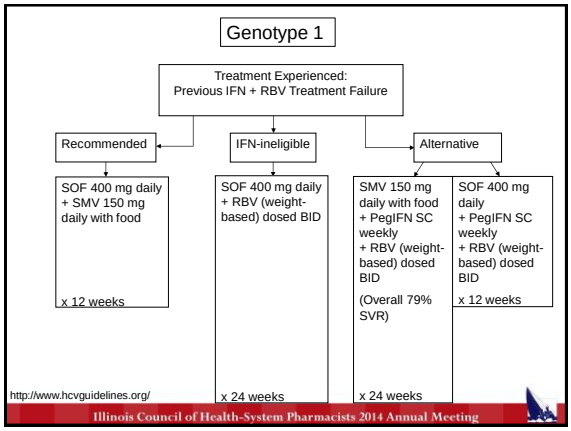
- Genotype (GT) 1: combinations of sofosbuvir (SOF), pegylated interferon (PegIFN) alfa, ribavirin (RBV), simeprevir (SMV)
- GT 2: SOF + RBV (all oral)
- GT 3: SOF + RBV (all oral)

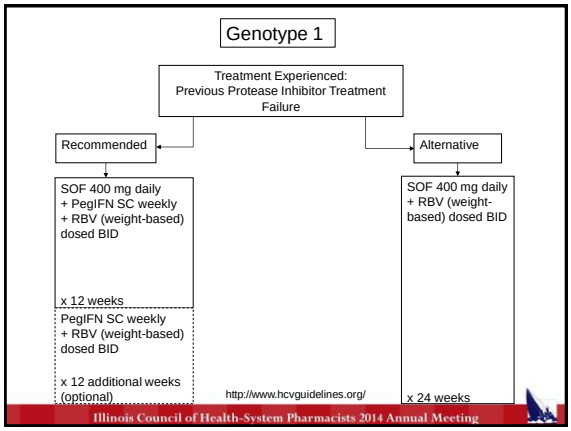
http://www.hcvguidelines.org/

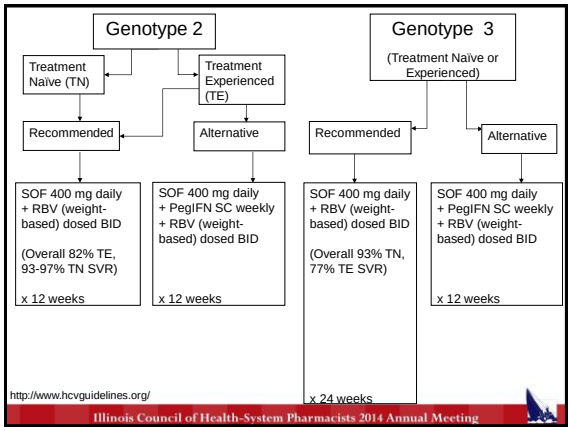
HCV Treatment Guidelines

- AASLD, IDSA, and IAS-USA collaborated to update HCV guidelines published online and updated with practice
  - First published online 1/29/2014 , updated 3/21/2014
  - Will be updated after next round of medications are reviewed by FDA in late 2014
  - http://www.hcvguidelines.org/









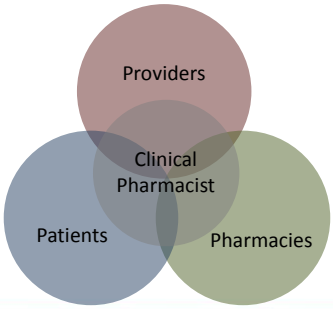
Learning Objective 2

- Recognize the role of the pharmacist in HCV management
  - Additional pharmacist roles will be introduced during panel discussion

Sample Liver Clinic Staff

- Hepatologists
- Physician Assistant
- Nurse Practitioner
- Clinical Pharmacist
- Nurse
- Fellows
- Receptionist
- Medical Assistants

Pharmacist Involvement in HCV Treatment



Clinical Pharmacist's Role: Interaction with Other Providers

- Serves as consultant or non-HCV questions from liver team
- Receives patient referrals from the MDs, PA, or NP for HCV treatment
- Works with MDs/PA/NP to ensure that patients are ready for HCV treatment
- Enters HCV treatment evaluation note
  - Performs medication reconciliation
  - Identifies and manages drug interactions
  - Advises on baseline lab/immunization orders

Clinical Pharmacist's Role: Interaction with Internal Specialty Pharmacy

- Sends all HCV prescriptions to institution's Specialty Pharmacy
- Coordinates with Specialty Pharmacy for medication benefits review and approval
- Acts as a medication acquisition liaison
- Sends HCV prescriptions to outside pharmacies if necessary

Clinical Pharmacist's Role: Interaction with Patients

- Once medication is approved, coordinates treatment initiation visit
- Conducts HCV education and treatment initiation visit
- Orders labs and follow-up clinic visits for entire course of HCV treatment
- Serves as direct phone contact for patients on HCV treatment
- Holds patient education classes
- Administers vaccinations

Patient Education

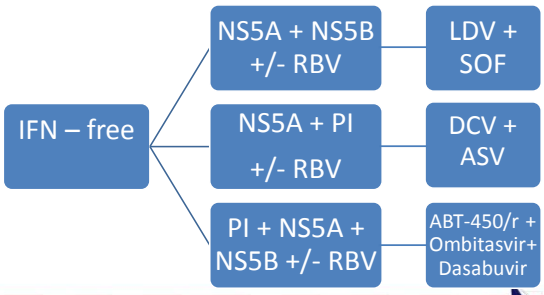
HCV Basics	• Modes of transmission • Genotype, treatment differences • Staging of disease
Lifestyle	• Abstaining from alcohol, tobacco, illicits • Diet • Exercise
Medications	• Adherence • Adverse effects • Interactions • Mechanisms • Monitoring • Resistance • Storage

Learning Objective 3

- Discuss the HCV agents in late-stage development

http://www.hcvadvocate.org/hepatitis/hepC/HCVDrugs.html

Future IFN-free GT 1 HCV Combination Treatment



LDV / SOF

- Regimen: fixed dose combination (FDC) of NS5A LDV 90mg / NS5B SOF 400mg; 1 tablet daily
- Gilead submitted NDA: 2/10/2014
- Prescription Drug User Fee Act (PDUFA) date: 10/10/2014

LDV / SOF

- 3 Phase III trials for GT 1: ION 1, 2, 3 (>1700 pts)
- Ongoing/future study populations: cirrhotics, HIV, GT 2, GT 3, GT 4, GT 6
- Most common ADRs: fatigue, headache, nausea
- DDIs: limited

LDV/SOF – ION Trials

Study	Characteristics (N)	Regimen	SVR	Discontinuations (D/C's) / Relapses / Breakthrough (BT)
ION-1	GT 1 TN (865), included pts with compensated cirrhosis (136/865)	LDV/SOF +RBV 12 wks (217)	97%	0 D/C's / 0 relapse / 0 BT
		LDV/SOF 12 wks (214)	99%	0 D/C's / 1 relapse (NS5A mutation) / 0 BT
		LDV/SOF +RBV 24 wks (217)	99%	6 D/C's / 0 relapse / 0 BT
		LDV/SOF 24 wks (217)	98%	4 D/C's / 1 relapse (NS5A mutation)/ 1 BT (non-adherent)
			94-100% in cirrhotics	

Afdhal N, Zeuzem S, et al. N Engl J Med. 2014.

LDV/SOF – ION Trials

Study	Characteristics (N)	Regimen	SVR	D/C's / Relapses / BT
ION-2	GT1 TE (with PI) (440), included 20 cirrhotic pts per arm (80/440)	LDV/SOF +RBV 12 wks (111)	96% 82% in cirrhotics	0 D/C's due to ADRs / 4 (4%) relapses / 0 BT
		LDV/SOF 12 wks (109)	94% 86% in cirrhotics	0 D/C's / 7 (6%) relapses / 0 BT
		LDV/SOF +RBV 24 wks (111)	99%	0 D/C's / 0 relapses / 1 BT
		LDV/SOF 24 wks (109)	99%	0 D/C's / 0 Relapses / 0 BT
		overall	Ave 98% without cirrhosis and 92% with cirrhosis	

Afdhal N, Reddy R, et al. N Engl J Med. 2014.

LDV/SOF – ION Trials

Study	Characteristics (N)	Regimen	SVR	D/C's / Relapses / BT
ION-3	GT 1 TN non-cirrhotic (647)	LDV/SOF +RBV 8 wks (216)	93%	1 D/C due to ADRs / 9 (4%) relapses / 0 BT
		LDV/SOF 8 wks (215)	94%	0 D/C's / 11 (5%) relapses / 0 BT
		LDV/SOF 12 wks (216)	95%	2 D/C's / 3 (1%) relapses / 0 BT

Kowdley KV, et al. N Engl J Med. 2014.

DCV and ASV

- NS5A inhibitor daclatasvir (DCV) 60mg daily + NS3 PI asunaprevir (ASV) 100mg BID for 24 weeks → GT 1b
- Daclatasvir in combination with other DAAs to treat other GTs (ex. DCV and SOF)
- Bristol-Myers Squibb submitted NDA 4/7/2014; given "breakthrough therapy designation"
- PDUFA date: 11/30/2014

DCV and ASV

- 2 phase III trials
- Other ongoing phase III trials:
  - ALLY 1 and 2 (DCV + SOF + RBV x 12 wks): cirrhotic pre- and post-transplant patients GT 1-6
  - ALLY 2 (DCV + SOF) : TN and TE non-cirrhotic HIV/HCV co-infected patients, GT 1-6
  - UNITY 1 (DCV + ASV + BMS 791325 x 12 wks): TN, TE non-cirrhotic GT 1
  - UNITY 2 (DCV + ASV + BMS 791325 + RBV x 12 wks): TN cirrhotic GT 1
  - UNITY 3 (2D or 3D x 12 or 24 wks): TN non-cirrhotics in Japan; GT 1b
- DDIs: PI: CYP3A4 interactions
- Common ADRs: increased ALT and AST, headache, diarrhea, nausea, nasopharyngitis, and pyrexia

DCV and ASV – Phase III Trial

Study	Characteristics (N)	Regimen	SVR	D/C's / Relapses / BT
Kumada et al	GT 1b TE in Japan; included compensated cirrhotic s (22/223)	DCV + ASV 24 wks; IFN-ineligible (135)	87.4%; 90.9% cirrhotics	9 D/C's / 11 relapses / 4 BT (+2 failures)
		DCV + ASV 24 wks; non-responders (87)	80.5%; 90.9% cirrhotics	2 D/C's / 6 relapses / 10 BT (+1 failure)
			Ave 84.7%	

Kumada H, et al. Hepatology. 2014.

DCV and ASV – HALLMARK-DUAL

Study	Characteristics (N)	Regimen	SVR24	D/C's / Relapses / BT
HALL MARK - DUAL	GT 1b TN and TE (745); included cirrhotics (223/745)	DCV + ASV 24 wks TN (203)	90%	6 (3%) D/C's / 5 (3%) relapses / 9 (4%) BT
		Placebo TN (102)	were treated after study	
		DCV + ASV 24 wks TE nonresponders (205) 31% cirrhotic	82%	2 (1%) D/C's / 7 (4%) relapses / 26 (13%) BT
		DCV + ASV 24 wks TE IFN-intolerant /ineligible (235) 47% cirrhotic	82%	2 (1%) D/C's / 12 (6%) relapses / 20 (9%) BT
			85% non-cirrhotic, 83% cirrhotic (ave)	

Manns M, et al. Lancet. 2014

ABT-450/r + Ombitasvir+ Dasabuvir

- 3D regimen components →GT 1
  - fixed-dose combination of the PI ABT-450 100mg/ritonavir 100mg with the NS5A inhibitor ombitasvir (ABT-267) 25mg daily, + NS5B dasabuvir (ABT-333) 250mg BID, +/- RBV x 12 wks
- AbbVie submitted NDA 4/21/2014; given "breakthrough therapy designation"
- PDUFA date: 12/21/2014

ABT-450/r + Ombitasvir+ Dasabuvir

- 6 Phase III studies (>2,300 patients)
- Ongoing/future study populations: GT 2, GT3, CKD, HIV, post-transplant
- Most common ADRs: fatigue, headache, pruritis, nausea
- DDIs: PI: CYP3A4 interactions

ABT-450/r + Ombitasvir+ Dasabuvir – Phase III Trials

Trial	Characteristics (N)	Regimen	SVR	D/C's / Relapses / BT
PEARL-II	GT 1b, TE (186) non-cirrhotic	3D +RBV (95) 12 wks	96.6%	2 (2.2%)D/C's / 0 relapse / 0 BT (1 lost to follow up)
		3D (91) 12 wks	100%	0 D/C / 0 relapse / 0 BT
PEARL-III	GT 1b, TN (419) non-cirrhotic	3D +RBV (210) 12 wks	99.5%	0 D/C's / 0 relapses / 1 BT
		3D (209) 12 wks	99%	0 D/C's / 0 relapses / 0 BT
PEARL-IV	GT 1a, TN (305) non-cirrhotic	3D +RBV (100) 12 wks	97%	0 D/C's / 1 (1%) relapse / 1 BT (1%)
		3D (205) 12 wks	90.2%	3 D/C / 10 (5.2%) relapses / 6 BT (2.9%)

Andreone P, et al. Gastroenterology. 2014.
Ferenci P, et al. N Engl J Med. 2014.

ABT-450/r + Ombitasvir+ Dasabuvir – Phase III Trials

Trial	Characteristics (N)	Regimen	SVR	D/C's / Relapses / BT
SAPPHIRE-I	GT1, TN (631) non-cirrhotic	3D + RBV (473) 12 wks	96.2% (95.3% GT 1a, 98% GT1b)	3 (0.6%) D/C's / 7 (1.5%) relapses / 1 BT
		placebo (158) 12 wks	Were offered treatment later	1 (0.6%) D/C / N/A / N/A
SAPPHIRE-II	GT1, TE (394) non-cirrhotic	3D + RBV (297) 12 wks	96.3% (96% GT 1a, 96.7% GT1b)	3 (1%) D/C 's / 7 relapses (4 stopped tx early) / 0 BT
		placebo (97) 12 wks	Were offered treatment later	

Feld JJ, et al. N Engl J Med. 2014.
Zeuzem S, et al. N Engl J Med. 2014.

ABT-450/r + Ombitasvir+ Dasabuvir – Phase III Trials

Trial	Characteristics (N)	Regimen	SVR	D/C's / Relapses / BT
TURQUOISE-II	GT1 TN and TE with compensated cirrhosis (380)	3D+RBV for 12 weeks (208)	91.8% (TN: 92.2% GT 1a, 100% GT 1b)	4 (1.9%) D/Cs / 12 (5.9%) relapses / 1 BT
		3D+RBV 24 weeks (172)	95.9% (TN: 92.9% GT 1a, 100% GT 1b)	4 (2.3%) D/Cs / 1 (0.6%) relapse / 3 BT

Poordad F, et al. N Engl J Med. 2014.

The Future of HCV Treatment

- All-oral therapy (elimination of PegIFN) for all genotype
- Combination DAAs
- Shortened treatment duration
- Simpler regimens
- Preventing relapses
- Addressing viral resistance / previous DAA failures

Learning Objective 4

- Calculate the costs of HCV treatment regimens

Recent Headlines about HCV Cost

- "Senators Ask Gilead to Explain Cost of Sovaldi Hepatitis Drug"
- "Gilead Offers Egypt New Hepatitis C Drug at 99 Percent Discount"
- "Fight for Cheap Drugs Shifts From AIDS to New Hepatitis Pills"
- "Demand for expensive hepatitis C drug strains insurers"
- "In 20 years, we can make hepatitis C rare – if we can afford the cure"
- "$1,000 Hepatitis Pill Shows Why Fixing Health Costs Is So Hard"

Current Cost of HCV Meds (as of 7/16/14)

Medication	Cost per 4 weeks	Cost per 12 weeks	Cost per 24 weeks
PegIFN2a	$ 3,569.73	$10,709.19	$21,418.38
PegIFN2b	$ 3,905.89	$11,717.67	$23,435.34
Ribavirin	$ 1,255.60	$3,766.80	$7,533.60
Simeprevir	$ 23,894.20	$71,682.6	Not applicable
Sofosbuvir	$ 30,244.60	$90,733.80	$181,467.60

Cost of HCV Treatment Courses (GT 1, 2, 3)

Regimen	Cost per 4 weeks	Cost per 12 weeks	Cost per 24 weeks
SOF + SMV	$54,138.80	**$162,416.40** (GT 1)	Not applicable
SOF + SMV + RBV	$55,394.40	**$166,183.20** (GT 1)	Not applicable
SOF + PegIFN2a / 2b + RBV	$35,069.93 / $35,406.09	**$105,209.79 / $106,218.27** (GT 1,2,3)	SOF x 12; PegIFN + RBV x 24 = **$119,685.78 / $121,702.74** (GT 1)
SMV + PegIFN2a / 2b + RBV	$28,719.53 / $29,055.69	$86,158.59 / $87,167.07	SMV x 12; PegIFN + RBV x 24 = **$100,634.58 / $102,651.54** (GT 1)
SOF + RBV	$31,500.20	**$94,500.60** (GT 2)	**$189,001.20** (GT 1,3)

Cost Analysis of SOF + SMV versus SOF + RBV for GT 1

Regimen	Cost of Rxs / SVR rates	Base Case Cost	QALYs	Cost / QALY	Cost / SVR	Cost Savings per SVR with SMV + SOF
SMV + SOF	~$150,000 / 52 – 84%	$165,336	14.69	$11,255	$170,456	$91,590
SOF + RBV	~$169,000 / 89 – 100%	$243,586	14.45	$16,857	$262,046	---

Hagen LM, et al. Hepatology. 2014.

Weighing the Costs

Cost of GT1 TN HCV Treatment (~$106,000)

Cost of a Liver Transplant (~$577,000)

http://www.transplantliving.org/before-the-transplant/financing-a-transplant/the-costs/

How do Payors Handle High Cost of HCV Treatment?

- Prioritization of patients for treatment
  - IL Medicaid imposes strict guidelines on coverage for HCV medication
  - Medicaid Managed Care and Cook County also have strict criteria for use of HCV medications
- Some insurance plans cover only one course of HCV treatment
- Want to prevent treatment failure and encourage successful treatment

Cost of Manufacturing HCV Treatment

- Predicted manufacturing costs for 12-week supply
  - Ribavirin $21–$63
  - Daclatasvir $10–$30
  - Sofosbuvir $68–$136
  - Faldaprevir $100–$210 (withdrawn from pipeline 6/20/14)
  - Simeprevir $130–$270

Complexity of synthesis (− / +)

Cost to manufacture (− / +)

Hill A, et al. Clin Infect Dis. 2014.

Summary

- HCV is a major public health concern
- HCV treatment is advancing rapidly; 6 more DAA approvals are anticipated in 2014 Q4
- Future developments include additional oral DAA agents, with the goal of IFN-free treatment for all genotypes, and shorter treatment duration
- Pharmacists have an important role in educating patients and providers about HCV medications and appropriate timing of treatment
- Cost and DDIs will continue to complicate HCV treatment

Going Viral!
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Panelists

- Payor Perspective: Mary Lynn Moody from UIC
- Specialty Pharmacy: Phoebe Sebhatu from Rush Specialty Pharmacy
- Inpatient Pharmacy: Hannah Brooks from Northwestern
- Clinic Perspective: Michelle Martin from UIC

Payor Considerations

Mary Lynn Moody, BSPharm
Manager, Medicaid 4 Prescription Policy
Clinical Associate Professor
University of Illinois at Chicago

The speaker has no conflict of interest to disclose.

THE WALL STREET JOURNAL. WSJ

How Illinois Allocates $84,000 Drug for Hepatitis C Treatment's High Cost Required Stringent Criteria, Official Says

abc NEWS

…..Oregon took up the issue a day after Illinois' Medicaid program put in place tight restrictions on the use of the drug, including requiring patients to meet 25 criteria and get prior approval…..

United Healthcare- one of the nation's largest insurers, said it spent $100 million on hepatitis C treatments in the first quarter of the year.

Payor Perspective

- All payors struggling with criteria
- Managed Care providers developing criteria
- High risk populations (Prison systems) developing criteria
- Medicaid providers have high numbers of hepatitis C patients

Oregon Medicaid Criteria August 2014

- Only for patients with later stages of liver damage
- Drug-free for at least six months
- Prescribed by a liver or gastrointestinal specialist
- Often requires months of waiting for an appointment

Key Illinois Medicaid Criteria July 2014

- Only for Patients with Metavir score of 4
- Drug and alcohol-free for 12 months
- Only FDA approved regimens
- Patients who are Genotype 1, not considered interferon-ineligible
- The patient has no history of a full or incomplete course of Sovaldi treatment ("Once in a lifetime" treatment policy)

Key Illinois Medicaid Criteria July 2014

- Non-compliance will result in discontinuation of previous prior approval
- Sovaldi will be dispensed as 2 weeks supply
- Any MD may prescribe. If the prescriber is NOT a board-certified gastroenterologist, transplant hepatologist or infectious disease specialist, a one-time written consultation report from a specialist required.
- Requests will not be accepted from mid-level practitioners and pharmacies

Specialty Pharmacy Considerations

Phoebe Sebhatu, PharmD
Clinical Pharmacy Specialist
Rush University Medical Center

The speaker has no conflict of interest to disclose.

Work Flow/Pharmacist Role

Office Visit
- Provider assessment of patient for eligibility
- +/-Pharm.D. counsels patient on care plan and insurance coverage

Benefits Investigation
- Initial assessment
- Prior authorization/appeals
- Set up Teach vs. Patient Access Enrollment appointment

Care Plan
- Teach then and follow up with patients monthly
- Pharm.D. at Teach and at follow up appointments as needed

Access Barriers to Medication(s)

- State
  - IL Medicaid
  - Aetna Better Health
  - CountyCare/U.S. Script

→ Patient Access Network

- Medicare
- Private Payers
- Complete Restriction vs. Risk Stratification

Formulary Considerations

Hannah Brooks, PharmD, BCPS
Northwestern Medicine

The speaker has no conflict of interest to disclose.

Northwestern Medicine: Hepatitis C Clinical Services

- Developed and implemented program for treatment
  - pre and post transplant
- Established HCV Treatment Protocol
- Pharmacy completes Prior Authorization process
- Pharmacist provides face-to-face in clinic or phone initiation education
- Monthly phone call follow up and monitoring

Hepatitis C Clinical Services Outcomes

- More than 70 patients started treatment
- Assisted in starting treatment for 126 patients:
  - 27 completed treatment course
  - **End of therapy cure rate = 96% (26/27)**
  - 66 currently on treatment
  - 33 pending start of treatment/ approval

Inpatient Formulary Process: Sofosbuvir and Simeprevir

- April 2014 P&T Committee
- Simeprevir/Sofosbuvir added to the formulary
- Approved as CONTINUATION of outpatient therapy only
- Utilize patient's own medication supply
- NMH Pharmacy does NOT stock Simeprevir or Sofosbuvir

Panelist Discussion Question and Answer Session

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ICHP Annual Meeting
September 12, 2014
Michelle T. Martin, PharmD, BCPS, BCACP

Self-Assessment Questions

1. A non-cirrhotic patient with HCV genotype 1a failed treatment with PegIFN and RBV in 2006-2007. Which one of the following regimens is best to recommend for this patient for retreatment per the AASLD guidelines?

A. SOF + PegIFN + RBV for 12 weeks

B. SMV + PegIFN + RBV for 24 weeks

C. SOF + SMV for 12 weeks

D. SOF + RBV for 24 weeks

2. A 47-year-old woman with HCV genotype 2 presents to her physician. She has cirrhosis and has not been treated for HCV in the past. Which treatment regimen is best for this patient?

A. SOF + PegIFN + RBV for 12 weeks

B. SMV + PegIFN + RBV for 24 weeks

C. SOF + SMV for 12 weeks

D. SOF + RBV for 12 weeks

3. A 42-year-old treatment naïve, non-cirrhotic HCV/HIV coinfected patient presents to liver clinic for HCV treatment evaluation. The patient's HIV regimen consists of atazanavir (Reyataz) 300 mg QHS, ritonavir 100 mg daily, and emtricitabine-tenofovir (Truvada) 200 mg-300 mg tablet daily. He is also well controlled on sertraline 25 mg

daily, levetiracetam 500 mg twice daily, and sildenafil 25 mg prn. Assuming all treatment regimens are FDA-approved and available, which one of the following regimens is best to recommend for this patient's HCV GT 1a treatment?

A. SOF + PegIFN + RBV for 12 weeks

B. SOF + SMV for 12 weeks

C. ABT-450/r + Ombitasvir + Dasabuvir + RBV for 12 weeks

D. DCV + ASV for 24 weeks

4. Which of the following treatment regimens is only pursuing FDA approval for HCV genotype 1b?

A. ABT-450/r + Ombitasvir + Dasabuvir + RBV for 12 weeks

B. DCV + ASV for 24 weeks

C. SOF + LDV for 12 weeks

D. SOF + SMV for 12 weeks

5. Which of the following best describes the role of an ambulatory care pharmacist in HCV treatment?

A. Educating providers and patients, and acting as a liaison with specialty pharmacies in order to facilitate HCV treatment.

B. Performing benefit verification

C. Dispensing HCV treatment

D. Participating in research

6. As of July 2014, In order to limit funds spent on HCV treatment, Illinois Medicaid is restricting HCV treatment coverage to only cover which patient population?

A. Pre-transplant patients

B. Post-transplant patients

C. Patients that have cirrhosis

D. Patients with hepatocellular carcinoma

7. Which HCV treatment regimen is most costly?

A. SOF + PegIFN + RBV for 12 weeks

B. SMV + PegIFN + RBV for 24 weeks

C. SOF + SMV for 12 weeks

D. SOF + RBV for 24 weeks

Answer Key: 1. C; 2. D; 3. A; 4. B; 5. A; 6. C; 7. D

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