Curriculum-Based Educational Initiatives:

OPTIMAL APPROACH TO IMPACTING MEDICINE AND PATIENT CARE
Dear Colleague:

Measurement of curriculum-based educational initiatives has demonstrated greater levels of impact than is often achieved through single educational activities. Multi-component programs deliver sustained exposure to education and have shown statistically significant change in knowledge, competence, performance, and patient outcomes. Recognizing the potential for curriculum-based initiatives to create such impact, many commercial supporters of education have reallocated funding, moving from single activities to larger-scale educational initiatives, such as personalized learning, curriculum-based initiatives, and PI CME. Medscape is proud to share examples of such initiatives, which were accepted for presentation at scientific meetings and educational conferences, underscoring the significance of the results produced by these larger-scale initiatives.

Regards,
The Medscape Education Team

TABLE OF CONTENTS

1 “Assessment of Clinician Practices in Screening and Linkage to Care for Chronic Hepatitis B” p4
Melissa Osborn, MD; Yelena Lyustikman, MS; Wendy E. Cerenzia, MS; Simi T. Hurst, PhD
MetroHealth Medical Center/Case Western in Cleveland, OH, USA; Medscape, LLC, New York, NY, USA; CE Outcomes, LLC, Birmingham, AL, USA

2 “Current Clinical Practices in PAH: Challenges and Opportunities to Improve Care” p8
Nimish Mehta, PhD, MBA, CCMEP; Tara Hermann, PhD; Chad Williamson, MS, MBA; Steven D. Nathan, MD
Medscape, LLC, New York, NY, USA; CE Outcomes, LLC, Birmingham, AL, USA; Inova Fairfax Hospital, Falls Church, VA, USA

3 “The Impact of a 12-Part Online CME Multimedia Curriculum Regarding Chronic Pain on Practice Patterns in Primary Care” p12
Anne Roc, PhD; Stacey Ullman, MHS; Perry G. Fine, MD; Greg Salinas, PhD; Sharon Hwang, MD
Medscape Education, New York, NY, USA; Department of Anesthesiology, University of Utah, Salt Lake City, UT, USA; Research and Assessment Services, CE Outcomes, LLC, Birmingham, AL, USA

4 “Personalized Learning: A Novel Educational Model to Bridge Clinical Practice Gaps in Chronic HBV Infection” p16
Nancy Reau, MD; Susan L. Smith, MN, PhD; Wendy Cerenzia, MS; Simi T. Hurst, PhD
Center for Liver Diseases, University of Chicago Medical Center, Chicago, IL, USA; Medscape, LLC, New York, NY, USA; CE Outcomes, Birmingham, AL, USA

5 “Elements to Consider in the Development, Implementation, and Evaluation of Performance Improvement CME” p20
Cyndi Grimes, CCMEP, and Jane Lowers
Medscape, LLC, New York, NY

Copyright© 2013 by Medscape, LLC.
For more information, contact: Rejean Rochette, Group Vice President rochette@medscape.net
“Assessment of Clinician Practices in Screening and Linkage to Care for Chronic Hepatitis B”

Medscape Education

Abstract: Chronic hepatitis B virus (HBV) infection is a significant threat to health and longevity both in the United States and abroad. There is a need to optimize care and improve identification of infected individuals. This study was designed to measure current clinician practices in HBV screening and linkage to care in a series of focused educational interventions to facilitate clinical performance improvement.

Methods: An Internet-based continuing medical education (CME) curriculum was created and assessed. Participants were 530 practicing primary care physicians and OB/GYNs (physicians from the following specialties: general practitioners, obstetricians, and gynecologists) from the United States. A 12-question baseline self-assessment (SA) was administered to determine physician knowledge and attitudes, barriers, and perceived skills. The SA included a set of questions regarding HBV screening and linkage to care among adults. After the baseline SA was completed, participants were randomly assigned to one of three study arms: group A (the baseline SA), group B (the baseline SA with an educational intervention), or group C (the baseline SA with an educational intervention and post-assessment). The educational intervention included an Internet-based CME curriculum and online posting of the final CME activity (www.medscape.org/viewarticle/758033).

Results: Among the 273 physicians who completed the baseline SA, 66% correctly interpreted serology data in the example shown. Of those who correctly interpreted the example data, 43%, 38%, and 8% indicated some, moderate, or extreme barriers, respectively. Physicians reported that key barriers to screening and linkage to care were lack of awareness of HBV infection, the majority of physicians could not recognize the importance of HBV reactivation, and lack of education about risk factors. Only 55% correctly interpreted serology data in the example shown. The majority of physicians reported that they do not receive guidance from routine health care providers on HBV screening and linkage to care, and 60% would like to receive such guidance. Physicians reported that key barriers to screening and linkage to care were lack of awareness of HBV infection, the majority of physicians could not recognize the importance of HBV reactivation, and lack of education about risk factors.

Conclusion: Despite identifying knowledge in gaps that could improve clinician practices for HBV treatment, the majority of physicians could not correctly identify patients to be screened for HBV infection or properly interpret HBV serological tests. Education focused on these gaps could improve clinician practices for HBV screening and linkage to care, and subsequently improve patient outcomes related to HBV screening and care. Additional education is recommended in the following topic areas: Geographic prevalence of HBV infection — Interpretation of HBV serology — Vaccination optimization — Overcoming barriers to screening, particularly among Asian Americans.
“Assessment of Clinician Practices in Screening and Linkage to Care for Chronic Hepatitis B”

**PRINCIPAL CURRICULUM OUTCOMES FINDINGS**

**Perinatal HBV Transmission**
- Compared with physicians who responded to the baseline survey, participants in the education had significantly greater knowledge that mode of delivery does not have an impact on transmission of HBV.
- Education participants had a significantly greater understanding, as compared with baseline respondents, of strategies to reduce perinatal transmission of HBV infection, including infant immunization, and that subsequent to immunization, breastfeeding was safe.
- Participants were significantly more cognizant that if infected during delivery, an infant had a 90% risk of developing chronic HBV infection.

**Follow-up/Complications**
- Fewer physicians participating in the activity would refer a patient immediately upon diagnosis of HBV infection, compared with physicians in the baseline assessment, demonstrating a higher level of comfort in managing patients with HBV infection.
- Significantly higher percentages of PCPs and OB/GYNs who participated in the activity recognized that nonalcoholic steatosis is not a long-term complication of HBV infection and were aware that HBV infection can lead to glomerulonephritis. Primary care physicians and OB/GYNs who participated in the education indicated significantly greater confidence in HBV risk factor assessment, as compared with baseline respondents.

**HBV/HIV Confection**
- PCPs and OB/GYNs who participated in the education are more confident in being able to provide appropriate follow-up care to an HIV/HBV-coinfected patient, as compared with the physicians from the baseline assessment, and were significantly more likely to recognize how confectioned with HIV affects the natural history of HBV infection and HBV vaccination response rates, compared with baseline respondents.

**Cultural Competency**
- Compared with baseline participants, more PCPs participating in the education recognized that family history of HBV infection should not be considered a barrier to HBV screening in Asian Americans.

**OVERALL IMPACT STATEMENT**

OB/GYNs and PCPs (n=1128) who participated in this educational curriculum were 37% (actual effect size of .58) more likely to make evidence-based choices than clinicians participating in the baseline clinical practice assessment conducted prior to the launch of the educational curriculum. Evidence-based choices by the OB/GYNs and PCPs who completed the case-based post-education assessment demonstrate the impact of the education.

**EFFECTIVENESS OF COMPLETED OUTCOMES STUDY**

In comparing the curriculum post-education assessment responses (participants in the curriculum education) with the responses obtained in the baseline clinical practice assessment, the following findings were observed:

**PRINCIPAL CURRICULUM OUTCOMES FINDINGS**

**Screening/Risk Factors**
- Participants in the education were more confident in evaluating risk factors for HBV infection and were better able to recognize patients who did or did not need to be screened for HBV based on patient characteristics, as compared with baseline respondents. In particular, educational participants recognized that all pregnant women should be screened for HBV.

**Diagnosis and Interpretation of Serologic Markers**
- Participants were more confident with respect to interpreting serologic markers for HBV infections and were slightly more likely to appropriately interpret HBV serology indicating chronic infection, as compared with baseline participants.
Current Clinical Practices in PAH: Challenges and Opportunities to Improve Care

Nimish Mehta, PhD, MBA, CCME®; Tara Herrmann, PhD; Chad Williamson, MS, MBA; Steven D Nathan, MD

Medscape, LLC, New York, NY, USA; ICE Outcomes, LLC, Birmingham, AL, USA; Novo Fanxin Hospital, Fuchs, UK, MD

Purpose
Pulmonary arterial hypertension (PAH) – a progressive and fatal disorder – is underrecognized and inadequately treated based on current evidence-based guideline recommendations. Delay in diagnosis of more than 2 years and inadequate treatment have been identified from the IDEAL registry.1,2 The objective of this study was to assess the current clinical practice of pulmonologists, cardiologists, and primary care physicians in PAH management to identify knowledge, competency, and practice gaps and barriers to improving the diagnosis and care of patients with this condition. An interim analysis of educational impact was also performed to determine improvements in clinical practice compared to baseline.

Methods
- The needs assessment survey consisted of 25 items based on current IDEAL consensus guidelines.
- The assessment design included knowledge- and case-based, multiple-choice questions made available online to Medscape membership of healthcare providers without monetary compensation or charge.

Results
- Close to 20% of pulmonologists, 30% of cardiologists, and 50% of PCPs could not identify the correct risk level or therapy for the low-risk patient (Figure 3).
- More than 68% of participants (pulmonologists, 85%; cardiologists, 85%; PCPs, 78%) recognized that a elevated right heart catheterization (RHC) pressure of 25 mm Hg or more was required to diagnose PAH (Figure 4).
- Almost 75% of pulmonologists, 80% of cardiologists, and 56% of PCPs would not perform catheterization to confirm a diagnosis of PAH (Figure 5).
- In addition to providing baseline data on clinical practice gaps, the data obtained from the baseline assessment were designed to serve as the control group for the practice outcomes assessment of the educational curriculum. Questions from the clinical practice assessment were aligned to individual curriculum programs and poised to prompt participants following completion of each curriculum activity, to assess their current outcomes.

Educational Impact
An interim analysis of the assessment of a subset of physicians participating in 3 educational interventions showed significant improvement in the following areas:
- At least 75% of all respondents recognized that an elevated right heart pressure and a central index of 1.5 L/min/m² would place a patient with PAH at greatest risk.
- Significantly more cardiologists (51% before participation in the activity and 88% after participation; P < .002) and pulmonologists (68% before and 87% after; P < .002) recognized the action of PDE-5 inhibitors in relation to PAH pathogenesis.
- When compared to baseline, 53% more pulmonologists (P = .04) and 33% more cardiologists (P = .12) correctly identified 26 mm Hg as the cut-off mPAP value to diagnose PAH.
- Cardiologists, 51% of cardiologists, and 50% of PCPs did not recommend right heart catheterization for PAH patients when compared to baseline.
- Almost 77% of pulmonologists, 80% of cardiologists, and 50% of PCPs did not recommend right heart catheterization for PAH patients when compared to baseline.
- Significantly more cardiologists would consider combination therapy for PAH in the appropriate clinical circumstance after participation in the educational activity compared with cardiologists in the baseline sample (76% before and 88% after; P < .002).

Conclusions and Clinical Implications
This assessment of healthcare providers’ clinical practices identified gaps in PAH diagnosis and management among pulmonologists, cardiologists, and PCPs.

- A significant proportion of physicians, regardless of specialty, would fail to perform right heart catheterization to confirm a diagnosis of PAH, which may result in misdiagnosis or undertreatment of the condition. This may be due to a lack of physician familiarity with PAH and its diagnostic algorithm.

Presented at CHEST in 2012; Poster contained data on baseline assessment and interim analysis.

Figure 1. Right heart catheterization for diagnosis of PAH

Figure 2. Appropriate clinical decision in the setting of management of severe PAH

Figure 3. Recognition of appropriate mPAP value in the diagnosis of PAH

Figure 4. Recognition of need for repeat right heart catheterization in PAH

Figure 5. Treatment recommendations for patients with PAH

For more information contact Nimish Mehta, PhD, MBA, CCME®, Director, Educational Strategy, Medscape, LLC, nmehta@medscape.net.

References
4. Knowledge of current PAH guideline recommendations on the management of PAH is suboptimal, particularly the monitoring and augmentation of therapy in patients with unstable disease.
5. Future programs emphasizing the optimization of the timing of monitoring and appropriate augmentation of therapy in patients with PAH are needed to improve clinical outcomes.
6. Significant improvement in the knowledge of pathobiostatistics and potential standard observed in identifying risk parameters, PAH pathogenesis, diagnosis and treatment outcomes are a result of educational interventions and expected to result in improvement in clinical outcomes of patients with PAH.
7. Quality improvement is not only a measure of patient outcomes but also a measure of provider performance and the quality of care provided.
8. The patient is high risk and should receive immediate treatment with a lung transplant should be performed.
9. The majority of physicians (pulmonologists, 89%; cardiologists, 85%; PCPs, 78%) recognized that a elevated right heart catheterization (RHC) pressure of 25 mm Hg or more was required to diagnose PAH (Figure 4).
10. At least 75% of all respondents recognized that an elevated right heart pressure and a central index of 1.5 L/min/m² would place a patient with PAH at greatest risk.
11. Significantly more cardiologists (51% before participation in the activity and 88% after participation; P < .002) and pulmonologists (68% before and 87% after; P < .002) recognized the action of PDE-5 inhibitors in relation to PAH pathogenesis.
12. When compared to baseline, 53% more pulmonologists (P = .04) and 33% more cardiologists (P = .12) correctly identified 26 mm Hg as the cut-off mPAP value to diagnose PAH.
13. Cardiologists, 51% of cardiologists, and 50% of PCPs did not recommend right heart catheterization for PAH patients when compared to baseline.
14. Almost 77% of pulmonologists, 80% of cardiologists, and 50% of PCPs did not recommend right heart catheterization for PAH patients when compared to baseline.
“Current Clinical Practices in PAH: Challenges and Opportunities to Improve Care”

OVERALL IMPACT STATEMENT

In total, 3071 physicians responded to the baseline assessment (1200 pulmonologists, 449 cardiologists, 1177 primary care providers (PCPs), and 355 other physicians). The results obtained demonstrate significant gaps in knowledge of PAH pathogenesis and knowledge and skills surrounding diagnosis, risk stratification, monitoring for disease activity, setting treatment goals, and interpreting the rationale for combination therapy in all clinical specialties. After the educational intervention, physicians showed statistically significant improvement.

GAP 1: DIAGNOSIS (BASELINE ASSESSMENT)

- Nearly 20% of pulmonologists, 40% of cardiologists, and 36% of PCPs did not recommend right heart catheterization to confirm a diagnosis of PAH (Figure 1).
- More than 16% of pulmonologists, 31% of cardiologists, and 56% of PCPs would not perform monthly liver function tests to monitor a patient taking bosentan.
- Close to 20% of pulmonologists, 30% of cardiologists, and 39% of PCPs did not recommend right heart catheterization to confirm a diagnosis of PAH (Figure 1).
- Lack of familiarity with PAH was cited most frequently by respondents as a barrier to appropriate diagnosis.
- A wide variation in recognition of the definition of pulmonary hypertension as mean pulmonary artery pressure (mPAP) ≥ 25 mm Hg was observed (Figure 2).

GAP 2: PATHOPHYSIOLOGY (BASELINE ASSESSMENT)

- More than one-third of respondents (pulmonologists, 34%; cardiologists, 39%; PCPs, 52%) did not recognize the role of phosphodiesterase type 5 (PDE-5) inhibition in the pathophysiology of PAH.
- A substantial percentage of physicians are “not at all confident” (pulmonologists, 22%; cardiologists, 31%; PCPs, 34%).
- The majority of physicians (pulmonologists, 89%; cardiologists, 85%; PCPs, 79%) recognized that a patient with PAH who remains in WHO functional class 3 or 4 and whose mPAP remains elevated after initial therapy should receive dual or triple therapy.

GAP 3: EVIDENCE-BASED TREATMENT STRATEGIES (BASELINE ASSESSMENT)

- More than 68% of pulmonologists, 74% of cardiologists, and 82% of PCPs reported that their practices do not use an algorithm for PAH management.
- Close to 20% of pulmonologists, 30% of cardiologists, and 39% of PCPs could not identify the correct risk level or therapy for the low-risk patient (Figure 3).
- Most respondents (pulmonologists, 62%; cardiologists, 59%; PCPs, 49%) are only somewhat confident in their ability to individualize PAH treatment based on functional classification, comorbid conditions, and risk assessment.

GAP 4: MONITORING (BASELINE ASSESSMENT)

- When deciding to repeat right heart catheterization, 43% of pulmonologists, 39% of cardiologists, and 43% of PCPs would base their decision on parameters other than the magnitude of clinical deterioration.
- More than 16% of pulmonologists, 31% of cardiologists, and 56% of PCPs would not perform monthly liver function tests to monitor a patient taking bosentan.

EFFECTIVENESS OF COMPLETED OUTCOMES STUDY

When compared to baseline, 13% more respondents recognized that an elevated right atrial pressure and a cardiac index of 1.6 L/min/m² would place a patient with PAH at greatest risk.

An interim analysis of the assessment of a subset of physicians participating in 3 educational interventions showed significant improvement in the following areas:

- At least 75% of all respondents recognized that an elevated right atrial pressure and a cardiac index of 1.6 L/min/m² would place a patient with PAH at greatest risk.
- Significantly more cardiologists (65% before participation in the activity and 88% after participation; P=0.03) and pulmonologists (68% before and 89% after; P=0.006) recognized the action of PDE-5 inhibitors in relation to PAH pathogenesis.

When compared to baseline, 51% more pulmonologists (P=0.04) and 30% more cardiologists (P=0.12) correctly identified 25 mm Hg as the cut-off mPAP value to diagnose PAH.

For more information contact Nimish Mehta, PhD, MBA, CCMEP, Director, Educational Strategy, Medscape, LLC, nmehta@medscape.net.

References:


P Pulmonary arterial hypertension (PAH) -- a progressive pathologic pathways.

P=0.04

P=0.03

P=0.006

P=0.002

P=0.02

P=0.04

P=0.12
Background

Medscape, LLC created a 12-part online CME multimedia curriculum to provide education to primary care providers on chronic pain, including the diagnosis and treatment of patients with chronic pain. The curriculum was designed to improve patient care through the education of primary care providers. The impact of the curriculum was assessed through baseline and post-education assessments.

Methods

The curriculum consisted of 12 modules, each focusing on a different aspect of chronic pain management. The modules included background information, definitions and pathophysiology, pain therapies, and pain assessment tools. The curriculum also included refresher questions and a final exam to assess the learners' knowledge.

Results

The results of the baseline assessment showed that primary care physicians had a limited understanding of chronic pain and its treatment. The post-education assessment showed significant improvement in knowledge and understanding of pain management. The assessment also demonstrated a significant increase in the use of pain assessment tools and an increase in the use of pain management strategies.

Conclusion

The impact of the 12-part online CME multimedia curriculum was significant as demonstrated by the increased knowledge and understanding of pain management among primary care physicians. The curriculum provided valuable information and resources to help healthcare providers improve their knowledge and understanding of chronic pain and its treatment.

Acknowledgements

This work was supported by grants from the National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS) and the National Institute of Neurological Disorders and Stroke (NINDS). The content is solely the responsibility of the authors and does not necessarily represent the official views of the NIAMS or NINDS.

References


Evidence-based treatment choices by PCPs
recognized the use of the Brief Pain Inventory for
with chronic pain through a series of short video
problem by educating clinicians who treat patients
= .002)
standard error for that question. The numerator within the applied formula was then calculated by
standard deviation, computed for each post-education
pathophysiologies, and factors that influence
and use validated instruments for pain assessment
diagnosis and treatment of patients with chronic pain.
and other healthcare providers involved in the
methods
figure 1
.expectations and instructions on safe use.
Treatment monitoring
questions.
Medscape’s curriculum model for PainTV
Outcomes to
collected by
pain which cause him to miss work. His pain is constant, and he indicates it is currently 2-3 out of 10. His pain increases to 7-8 out of 10 when
exam, and he was treated with 4000 mg acetaminophen and physical therapy. He continues to experience frequent episodes of lower back
A 59-year-old man had acute herpes zoster 9 months ago in the area of his left forehead and eye. The rash resolved;
acetaminophen
resolution of the
20%
75%
Tricyclic
antidepressant
76%
100%
60%
80%
20%
80%
figure 1
figure 9
DEFINITIONS AND PATHOPHYSIOLOGY
• Compared with baseline, significantly more post-
education PCPs recognized that the diagnosis of postherpetic neuralgia (PHN) is made when pain persists for 2 months beyond the rash resolution
(59% at baseline vs 75% post-education, P < .001).
Fewer physicians are delaying diagnosis post-
education, which may enable earlier treatment and resolution of symptoms.
GAP 2: DIAGNOSIS AND ASSESSMENT
• Significantly more post-education physicians
(13% at baseline vs 43% post-education, P < .001) recognized the use of the Brief Pain Inventory for
patient pain assessment over the last 24 hours.
GAP 3: PAIN TREATMENTS — PHARMALOGIC
• For a patient with chronic low back pain (LBP), after
CME more than three-fourths of physicians would add
a tricyclic antidepressant to the medical therapy, a
statistically significant increase from baseline (56% at baseline vs 76% post-education, P < .002).
• Post-education PCPs are significantly less likely to
choose a short acting as-needed opioid for a patient’s initial opioid therapy. One-fifth of PCPs post-education
would instead opt for a daily long-acting opioid.
• For a patient with knee osteoarthritis, PCPs post-
education were more likely to initiate self-help
and patient-driven treatments (39% at baseline vs
59% post-education) but less likely to aspirate
the effusion (23% at baseline vs 18% post-education) or
inject with corticosteroid (57% at baseline vs 47% post-education). Post-education participants were
significantly more likely, compared with baseline, to
choose one of the appropriate responses (P < .002).
GAP 4: PAIN TREATMENTS — NONPHARMALOGIC
• Over half of respondents would appropriately
recommend low-impact aerobic exercises for a patient
presenting with chronic low back pain, a significant
increase from baseline (42% at baseline vs 52% post-
education, P < .05).
• The other half of physicians would instead order
further diagnostic imaging, although guidance states this
imaging should not be routinely obtained.
GAP 5: PATIENT EDUCATION
• Discussions of goal-setting (81% at baseline vs 87%
post-education) and safe opioid storage
(56% at baseline vs 66% post education) increased
post-education, while discussions of exit strategy
decreased, compared with baseline (56% vs 60%).
EDUCATIONAL IMPACT
In comparing participants’ curriculum post-education
assessment responses with the responses obtained in
the baseline clinical practice assessment, primary care
physicians are significantly more likely post-education to:
• Recognize that the diagnosis of postherpetic
neuralgia (PHN) is made when pain persists for
2 months beyond the rash resolution (75% post-
education vs 59% at baseline, P < .001)^a).
• Utilize the Brief Pain Inventory to assess the impact
of a patient’s pain on his physical functioning,
emotional status, and sleep, over the last 24 hours
(43% post education vs 33% at baseline, P < .02^a).
• Properly adjust the pain medicine regimen of a
patient with chronic low back pain (76% post-
education vs 56% at baseline, P < .001^a).
• Choose an appropriate course of action for a patient
presenting with osteoarthritis of the knee (63% post
education vs 48% at baseline, P < .002^).
• Recognize the value of cardiovascular exercise for a
patient with fibromyalgia (34% post education vs
21% at baseline, P < .001^b), and
• Encourage low-impact aerobic exercises for a patient
presenting with chronic low back pain (34% post
education vs 14% at baseline, P < .05^b).
Personalized Learning: A Novel Educational Model to Bridge Clinical Practice Gaps in Chronic HBV Infection

Nancy Reau, MD1; Susan L. Smith, MN, PhD2; Wendy Cerenzia, MS3; Simi T. Hurst, PhD2

Center for Liver Diseases, University of Chicago, Chicago, IL; Medscape, LLC, New York, NY; 1CE Outcomes, Birmingham, AL, USA

Abstract
Background: Chronic hepatitis B virus (HBV) infection is underdiagnosed in the United States; only 20% to 25% of treatment-eligible patients are successfully engaged in treatment. Current educational interventions may not be tailored to the specific needs and learning preferences of individual learners. Personalized Learning (PL) may be more effective in addressing gaps in chronic HBV education.

Objectives: The goal of PL activities is to foster continued professional development among all HBV professionals not only by promoting clinical learning, but through increasing clinician competency – including awareness, appropriate diagnosis, and treatment of chronic HBV infection. Accordingly, PL initiatives have been designed to improve educational effectiveness – increase engagement and, where appropriate, knowledge, skills, or performance as related to managing patients with chronic HBV infection and related comorbid conditions.

Methods: A pre-specified comprehensive education effectiveness evaluation plan will analyze the following: Percentages of learners achieving an educational intervention level or more activities – Percentage of learners completing – Aggregate improvement in scores between SA and post-assessment for all learners completing each recommended course at a matched individual or individual level – Aggregate differences between prescribed pre-assessment scores and scores of a demographically similar control group.

Introduction
Chronic HBV Infection in the United States: Chronic hepatitis B virus (HBV) infection is estimated to affect ~1.5 million persons in the United States. It is estimated that <5% of affected HBV-positive individuals with chronic HBV infection are screened, linked into care, receive prescription drugs, and are successfully treated for hepatitis B.

Population of HBV professionals included in the study: Hepatologists, internists, family physicians, and obstetrician/gynecologists

CME activity topics: • Needs of Mother and Child • Patient with Chronic HBV Infection • Needs of 'Special' Populations

Conclusion: The PL model leverages Medscape’s unique structural instructional methodology to assess learners’ individual competencies related to practicing evidence-based medicine and to evaluate educational plans and resources. Self-Assessment and Post-Test/Assessment: SA and post-assessment data were analyzed to determine the phase of HBV infection, only participants able to appropriately interpret serologic tests were included in the analysis. A statistical analysis package for the social sciences was used to determine the significance of participant responses to the following questions: – Patients with chronic HBV infection are screened, linked into care, receive prescription drugs, and are successfully treated for hepatitis B. – The goal of SA activities is to foster continued professional development among all HBV professionals not only by promoting clinical learning, but through increasing clinician competency – including awareness, appropriate diagnosis, and treatment of chronic HBV infection.

Accordingly, SA initiatives have been designed to improve educational effectiveness – increase engagement and, where appropriate, knowledge, skills, or performance as related to managing patients with chronic HBV infection and related comorbid conditions.

Self-Assessment
Prescribed Activities
Post-Test/Assessment

Data Collection and Analysis
The SA data will be analyzed using SPSS 20.0. The data will be processed and analyzed for the effectiveness of the SA and post-assessment, as well as the interactivity and engagement of the participants.

Discussion and Conclusion
The data collected from the SA and post-assessment will be examined for the effectiveness of the SA and post-assessment, as well as the interactivity and engagement of the participants. The data will be processed and analyzed for the effectiveness of the SA and post-assessment, as well as the interactivity and engagement of the participants. The data will be processed and analyzed for the effectiveness of the SA and post-assessment, as well as the interactivity and engagement of the participants.

Results
Clinical Practice Self-Assessment Baseline Sample

<table>
<thead>
<tr>
<th>Practice location</th>
<th>General practice</th>
<th>Rural</th>
<th>Solo practice</th>
<th>Group practice</th>
<th>Nongovernment hospital</th>
</tr>
</thead>
<tbody>
<tr>
<td>% of patients with chronic HBV infection</td>
<td>73%</td>
<td>81%</td>
<td>73%</td>
<td>81%</td>
<td>73%</td>
</tr>
<tr>
<td>% of patients with chronic HBV infection</td>
<td>73%</td>
<td>81%</td>
<td>73%</td>
<td>81%</td>
<td>73%</td>
</tr>
<tr>
<td>% of patients with chronic HBV infection</td>
<td>73%</td>
<td>81%</td>
<td>73%</td>
<td>81%</td>
<td>73%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1-10</th>
<th>31-40</th>
<th>&gt; 40</th>
</tr>
</thead>
<tbody>
<tr>
<td>73%</td>
<td>81%</td>
<td>73%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>31-40</th>
<th>&gt; 40</th>
</tr>
</thead>
<tbody>
<tr>
<td>73%</td>
<td>81%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1-10</th>
<th>31-40</th>
<th>&gt; 40</th>
</tr>
</thead>
<tbody>
<tr>
<td>73%</td>
<td>81%</td>
<td>73%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>31-40</th>
<th>&gt; 40</th>
</tr>
</thead>
<tbody>
<tr>
<td>73%</td>
<td>81%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1-10</th>
<th>31-40</th>
<th>&gt; 40</th>
</tr>
</thead>
<tbody>
<tr>
<td>73%</td>
<td>81%</td>
<td>73%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>31-40</th>
<th>&gt; 40</th>
</tr>
</thead>
<tbody>
<tr>
<td>73%</td>
<td>81%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1-10</th>
<th>31-40</th>
<th>&gt; 40</th>
</tr>
</thead>
<tbody>
<tr>
<td>73%</td>
<td>81%</td>
<td>73%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>31-40</th>
<th>&gt; 40</th>
</tr>
</thead>
<tbody>
<tr>
<td>73%</td>
<td>81%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1-10</th>
<th>31-40</th>
<th>&gt; 40</th>
</tr>
</thead>
<tbody>
<tr>
<td>73%</td>
<td>81%</td>
<td>73%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>31-40</th>
<th>&gt; 40</th>
</tr>
</thead>
<tbody>
<tr>
<td>73%</td>
<td>81%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1-10</th>
<th>31-40</th>
<th>&gt; 40</th>
</tr>
</thead>
<tbody>
<tr>
<td>73%</td>
<td>81%</td>
<td>73%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>31-40</th>
<th>&gt; 40</th>
</tr>
</thead>
<tbody>
<tr>
<td>73%</td>
<td>81%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1-10</th>
<th>31-40</th>
<th>&gt; 40</th>
</tr>
</thead>
<tbody>
<tr>
<td>73%</td>
<td>81%</td>
<td>73%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>31-40</th>
<th>&gt; 40</th>
</tr>
</thead>
<tbody>
<tr>
<td>73%</td>
<td>81%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1-10</th>
<th>31-40</th>
<th>&gt; 40</th>
</tr>
</thead>
<tbody>
<tr>
<td>73%</td>
<td>81%</td>
<td>73%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>31-40</th>
<th>&gt; 40</th>
</tr>
</thead>
<tbody>
<tr>
<td>73%</td>
<td>81%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1-10</th>
<th>31-40</th>
<th>&gt; 40</th>
</tr>
</thead>
<tbody>
<tr>
<td>73%</td>
<td>81%</td>
<td>73%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>31-40</th>
<th>&gt; 40</th>
</tr>
</thead>
<tbody>
<tr>
<td>73%</td>
<td>81%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1-10</th>
<th>31-40</th>
<th>&gt; 40</th>
</tr>
</thead>
<tbody>
<tr>
<td>73%</td>
<td>81%</td>
<td>73%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>31-40</th>
<th>&gt; 40</th>
</tr>
</thead>
<tbody>
<tr>
<td>73%</td>
<td>81%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1-10</th>
<th>31-40</th>
<th>&gt; 40</th>
</tr>
</thead>
<tbody>
<tr>
<td>73%</td>
<td>81%</td>
<td>73%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>31-40</th>
<th>&gt; 40</th>
</tr>
</thead>
<tbody>
<tr>
<td>73%</td>
<td>81%</td>
</tr>
</tbody>
</table>
Personalized Learning: A Novel Educational Model to Bridge Clinical Practice Gaps in Chronic HBV Infection

Following participation in the education, specialists (83%) were significantly more likely to follow the AASLD’s “Chronic Hepatitis B: Update 2009” recommendations for a patient who is HBsAg negative with rising ALT and HBV DNA levels compared with before the education (64%, P = .01).

Following participation in the education, specialists (64%) were significantly more likely to follow the AASLD’s “Chronic Hepatitis B: Update 2009” recommendations for a patient who is HBsAg negative with an elevated ALT and HBV DNA 25000 IU/mL compared with before the education (38%, P = .02) and with specialist nonparticipants (37%, P = .05).

Following participation in the education, specialists (69%) were more likely to appropriately address an ALT > 2xULN in an HIV/HBV-infected patient who is being treated with a HAART regimen including zidovudine/lamivudine than before the education (59%, P = .02) and compared with specialist nonparticipants (53%, P = .06).

Following participation in the education, specialists (93%) were significantly more likely to recognize the appropriate next step for a patient with HIV-HBV coinfection that has developed resistance to lamivudine is to switch the patient to tenofovir/entecavir as HIV regimen backbone than before the education (34%, P = .001) and compared to specialist nonparticipants (39%, P = .002).

Following participation in the education, specialists (79%) were significantly more likely to recognize that IRIS occurs most often in patients with HIV-HBV coinfection when treatment for HBV is initiated when the patient’s CD4 cell count is < 200 cells/mL, as compared to before the education (44%, P = .004).

Following participation in the education, specialists (72%) were significantly more likely to recognize that in a cancer patient about to begin chemotherapy, HBsAg-negative serostatus makes HBV reactivation less likely, compared with HBsAg-positive status than before the education (41%, P = .02).

Following participation in the education, specialists (89%) were significantly more likely to appropriately start antiviral prophylaxis (to prevent HBV reactivation) in a patient with cancer who is about to start chemotherapy than they were prior to the education (72%, P = .02) and compared with specialist nonparticipants (57%, P = .005).

EFFECTIVENESS OF COMPLETED OUTCOMES STUDY

OVERALL IMPACT STATEMENT

Specialists (gastroenterologists, infectious disease specialists, hepatologists) and PCPs (n = 395) who participated in this educational program are 43% more likely to make evidence-based choices after participating in the personalized educational program.

GAP 1: USE OF CLINICAL AND LABORATORY DATA TO INFORM CLINICAL DECISION-MAKING

- Following participation in the education, PCPs (69%) were significantly more likely to recognize the laboratory values that characterized chronic HBV infection than before the education (57%, P = .02).
- Following participation in the education, PCPs (69%) were significantly more likely to recognize the laboratory values that characterized chronic HBV infection than PCP nonparticipants (54%, P = .04).
- Following participation in the education, specialists (82%) were significantly more likely to select the antiviral agent that provides the highest genetic barrier to resistance after participating in the education compared with before the education (75%, P < .001) and with PCP nonparticipants (4.2%, P < .001).
- Following participation in the education, specialists (95%) were significantly more likely to recognize that nephrotoxicity is a potential side effect of tenofovir and adefovir than before the education (79%, P = .02).
- Following participation in the education, PCPs (88%) were significantly more likely to recognize that nephrotoxicity is a potential side effect of tenofovir and adefovir than before the education (56%, P = .001) and then PCP nonparticipants (59%, P = .001).

GAP 2: USE OF EVIDENCE-BASED TREATMENT RECOMMENDATIONS

- Following participation in the education, specialists (83%) were significantly more likely to follow the AASLD’s “Chronic Hepatitis B: Update 2009” recommendations for a patient who is HBsAg negative with rising ALT and HBV DNA levels compared with before the education (64%, P = .01).

- Following participation in the education, specialists (64%) were significantly more likely to follow the AASLD’s “Chronic Hepatitis B: Update 2009” recommendations for a patient who is HBsAg negative with an elevated ALT and HBV DNA 25000 IU/mL compared with before the education (38%, P = .02) and with specialist nonparticipants (37%, P = .05).

- Following participation in the education, specialists (69%) were more likely to appropriately address an ALT > 2xULN in an HIV/HBV-infected patient who is being treated with a HAART regimen including zidovudine/lamivudine than before the education (59%, P = .02) and compared with specialist nonparticipants (53%, P = .06).

- Following participation in the education, specialists (93%) were significantly more likely to recognize the appropriate next step for a patient with HIV-HBV coinfection that has developed resistance to lamivudine is to switch the patient to tenofovir/entecavir as HIV regimen backbone than before the education (34%, P = .001) and compared to specialist nonparticipants (39%, P = .002).

- Following participation in the education, specialists (79%) were significantly more likely to recognize that IRIS occurs most often in patients with HIV-HBV coinfection when treatment for HBV is initiated when the patient’s CD4 cell count is < 200 cells/mL, as compared to before the education (44%, P = .004).

- Following participation in the education, specialists (72%) were significantly more likely to recognize that in a cancer patient about to begin chemotherapy, HBsAg-negative serostatus makes HBV reactivation less likely, compared with HBsAg-positive status than before the education (41%, P = .02).

- Following participation in the education, specialists (89%) were significantly more likely to appropriately start antiviral prophylaxis (to prevent HBV reactivation) in a patient with cancer who is about to start chemotherapy than they were prior to the education (72%, P = .02) and compared with specialist nonparticipants (57%, P = .005).

GAP 3: EFFECTIVE COMMUNICATION TO FACILITATE PATIENT ADHERENCE TO TREATMENT

- Following participation in the education, specialists (79%) were significantly more likely to start a patient who is HBV positive and pregnant on antiviral medication at 32 weeks of pregnancy to prevent maternal-fetal transmission than before the education (57%, P = .001) and compared with specialist nonparticipants (34%, P = .002).

- Following participation in the education, specialists (72%) were significantly more aware that antiviral medication for an HBeAg-positive pregnant patient with chronic HBV infection should be started at an HBV DNA level > 1000 copies/mL, compared with before the education (81%, P = .001) and compared with specialist nonparticipants (33%, P = .001).
Elements to Consider in the Development, Implementation, and Evaluation of Performance Improvement CME

Abstract
Since the American Medical Association (AMA) created Performance Improvement Continuing Medical Education (PI CME), a new format for AMA Physician’s Recognition Award (PRA) Category 2 CME for physicians engaged in self-evaluation and improvement activities related to their clinical performance, different approaches to this process have been implemented by accredited providers. Many factors must be considered during the design of PI CME systems to ensure optimal physician participation and improvement performance. Medscape, LLC, designed a PI CME platform that leverages the self-directed nature of its membership and included other key factors seen as beneficial to participants. Insights gathered during the development, implementation, and evaluation of PI CME within this system will help other providers design future effective PI CME programs.

User Experience
• Participants check off each measure that they have used as part of their self-directed improvement during this stage.
• Participants may also add their own improvement efforts outside of the provider’s recommendations; for example, attending a local live event on diabetes.
• Stage B lasts a minimum of 3 months before participants can progress to Stage C to allow sufficient time for participants to plan and enact changes in their practice; however, participants have up to 1.5 months before they must complete Stage C.

Results
Medscape launched 3 PI CME activities in the areas of depression, diabetes, and osteoporosis starting in March 2012 that were supported by independent educational grants from Lilly USA, LLC.
• Participation results as of April 2012 are listed in Table 2 (note that many physicians are still in the process of completing their PI CME and may not be eligible to start Stage C yet).
• Additional PI CME programs on pain (supported by Lilly USA, LLC), on rheumatoid arthritis (supported by AbbVie and UCB Pharma), and on HIV (supported by Glaxo) are in progress.

Key Learning and Considerations
• Design a PI CME initiative that will allow physicians to self-direct their performance improvement specifi c to their clinical needs based on performance measures.
• Link core competencies to performance measures to enhance physician's ability to address key areas of performance improvement.
• Define the target population to allow for ease of chart selection and mail.
• Recommend multiple interventions based on a physician’s customized improvement plan.

Table 2. PI CME Completion as of April 2012

<table>
<thead>
<tr>
<th>Measure</th>
<th>Checklist % of Participants</th>
<th>Stage A</th>
<th>Stage B</th>
<th>Stage C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression</td>
<td>50%</td>
<td>35%</td>
<td>15%</td>
<td>5%</td>
</tr>
<tr>
<td>Diabetes</td>
<td>60%</td>
<td>40%</td>
<td>20%</td>
<td>10%</td>
</tr>
<tr>
<td>Osteoporosis</td>
<td>75%</td>
<td>50%</td>
<td>25%</td>
<td>20%</td>
</tr>
</tbody>
</table>

Acknowledgements
• American Medical Association and American Academy of Family Physicians.
• The American Medical Association and other partners.
• Medscape, LLC, New York, NY.
• University Press.

References

P O S T E R
Presented at CME Congress 2012.
Introduction

Medscape launched 3 PI CME activities in the areas of depression, diabetes, and osteoporosis starting in March 2012 that were supported by independent educational grants from Lilly USA, LLC.

Participation results as of April 2012 are listed in Table 2. (Note that many physicians are still in the process of completing their PI CME and may not be eligible to start Stage C yet.)

Additional PI CME programs on pain (supported by Lilly USA, LLC), on rheumatoid arthritis (supported by Abbott and UCB Pharma), and on HIV (supported by Gilead) are in progress.

Table 2: Medscape PI CME Completers as of April 2012

<table>
<thead>
<tr>
<th>PI CME Program Topic</th>
<th>Stage A</th>
<th>Learning Plan</th>
<th>Stage B</th>
<th>Stage C</th>
<th>% Completed to Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetes</td>
<td>2861</td>
<td>2605</td>
<td>2118</td>
<td>632</td>
<td>24</td>
</tr>
<tr>
<td>Depression</td>
<td>3159</td>
<td>2846</td>
<td>2361</td>
<td>897</td>
<td>30</td>
</tr>
<tr>
<td>Osteoporosis</td>
<td>2657</td>
<td>2360</td>
<td>1937</td>
<td>423</td>
<td>20</td>
</tr>
</tbody>
</table>

Key Learning and Considerations

- Design a PI CME initiative that will allow physicians to self-direct their performance improvement specific to their clinical needs based on performance measures.
- Link core competencies to performance measures to enhance physicians’ ability to address key areas of improvement in practice.
- Define the patient population to allow for ease of chart selection and input.
- Recommend multiple interventions based on a physician’s customized improvement plan.