MedBiquitous
Journal-based Continuing Education Guidelines

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MedBiquitous Journal Working Group

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Journal-based Continuing Education Guidelines

1. Acknowledgements

These guidelines are based on work done by the American Academy of Pediatrics and HighWire Press. Other members of the MedBiquitous Journal Working Group contributed to this as well, including:

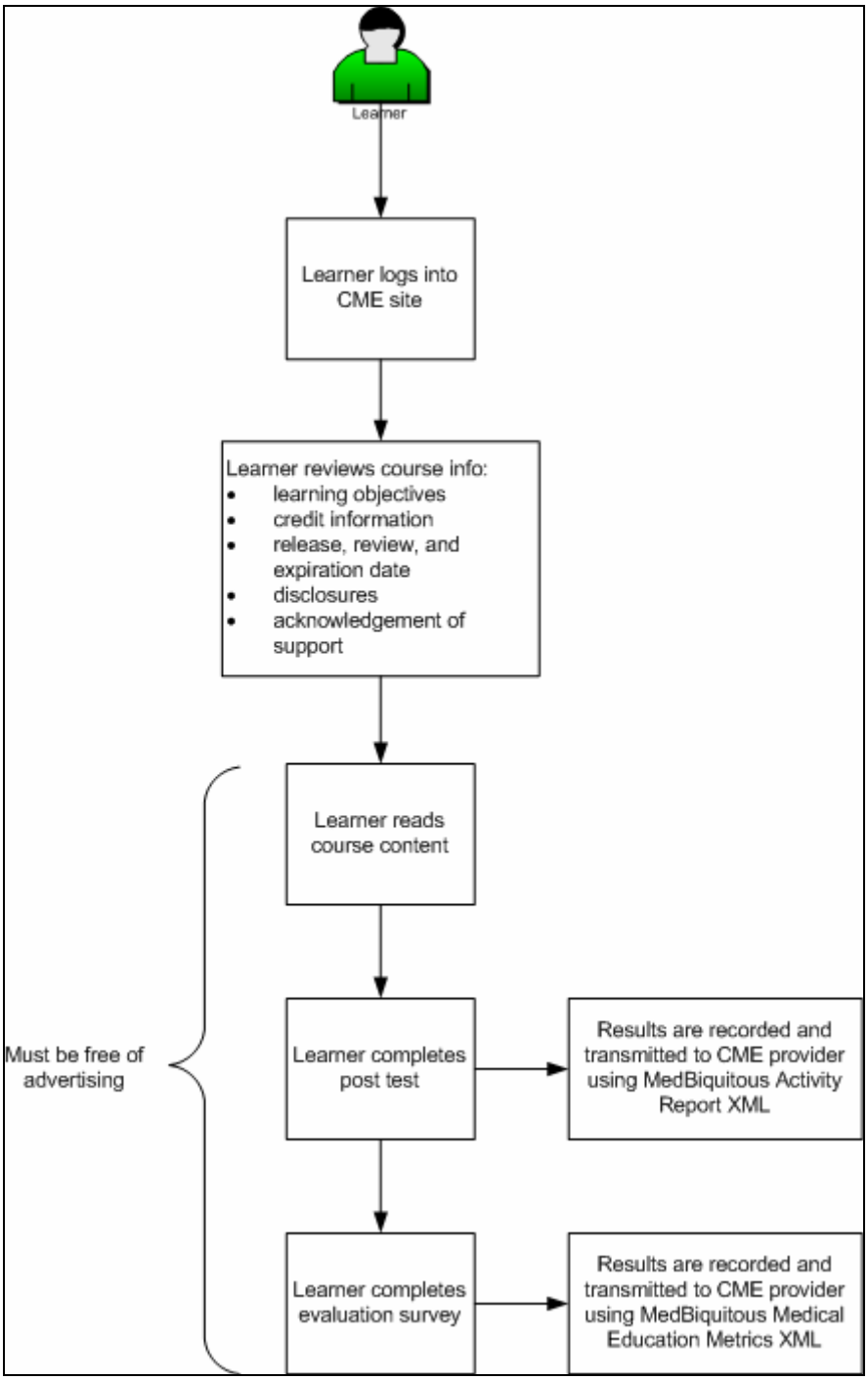
- Michael Clarke, American Academy of Pediatrics
- Peter Greene, MedBiquitous
- Ellis Pritchard, Wiley
- Valerie Smothers, MedBiquitous
- Craig Van Dyck, Wiley
- Bill Witscher, HighWire Press

2. Introduction

Scientific journals have long been an invaluable source of new information and research for clinicians. Clinicians are increasingly utilizing online journal publications for their education. In parallel, licensing and certifying boards are increasingly requiring continuing education. With these changes come opportunities for leveraging the online environment to create more interactive and effective journal-based Continuing Education (CE) and Continuing Medical Education (CME).

This document provides a series of pedagogical, process, and technical recommendations for those organizations interested in implementing online journal CE and CME independently or with an online publishing partner. It recommends the use of technology standards where possible to facilitate data exchange and tracking across systems and organizations.

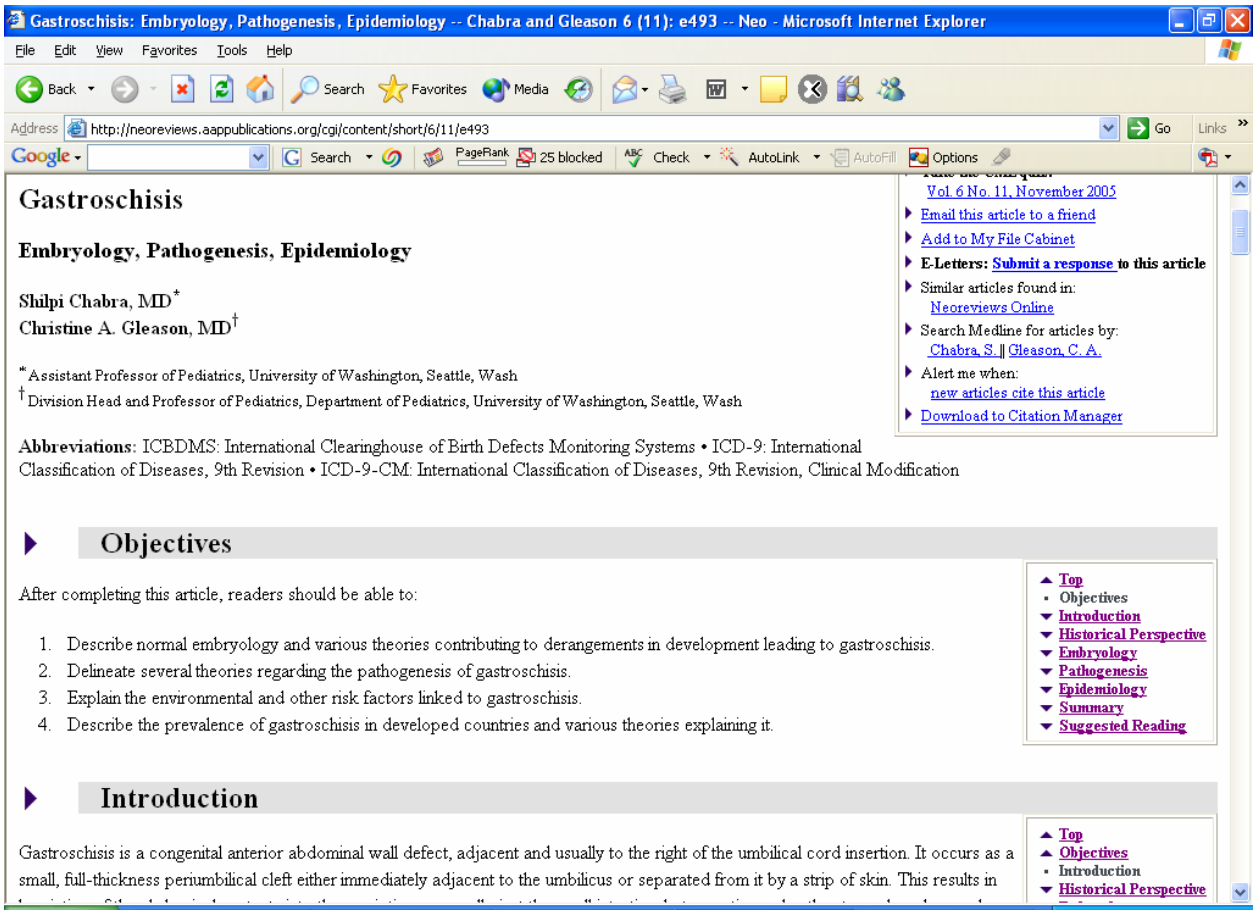
The following diagram provides an overview of the steps commonly involved in completing online Journal CE and CME and shows how XML technology standards can facilitate the integration of Journal-based education data into the overall CE/CME program of an accredited provider.



The Online Journal CME Process

The following screenshots show an example of journal-based CME from the American Academy of Pediatrics Neoreview.

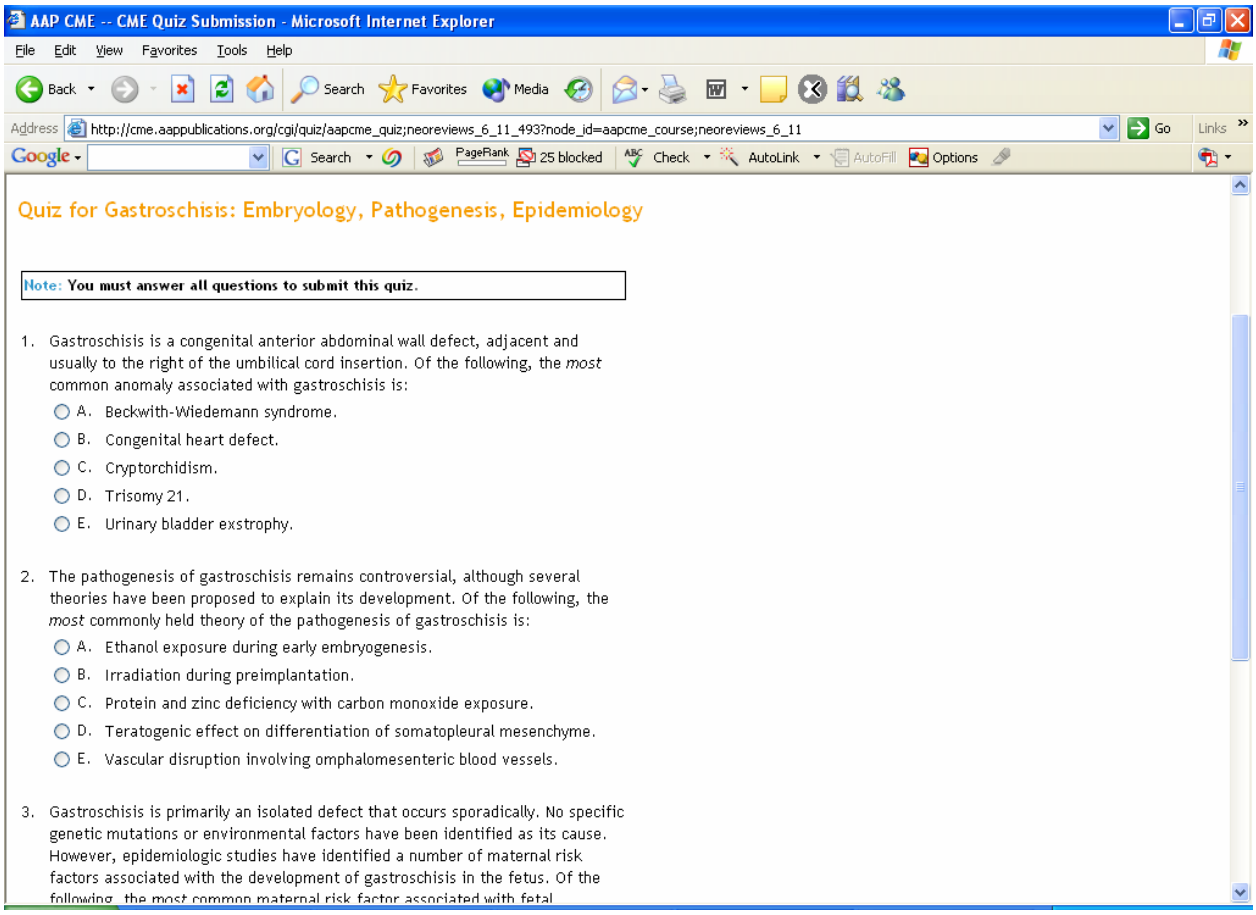
The Journal article in this case includes the learning objectives for the CME course.



Article for Journal CME

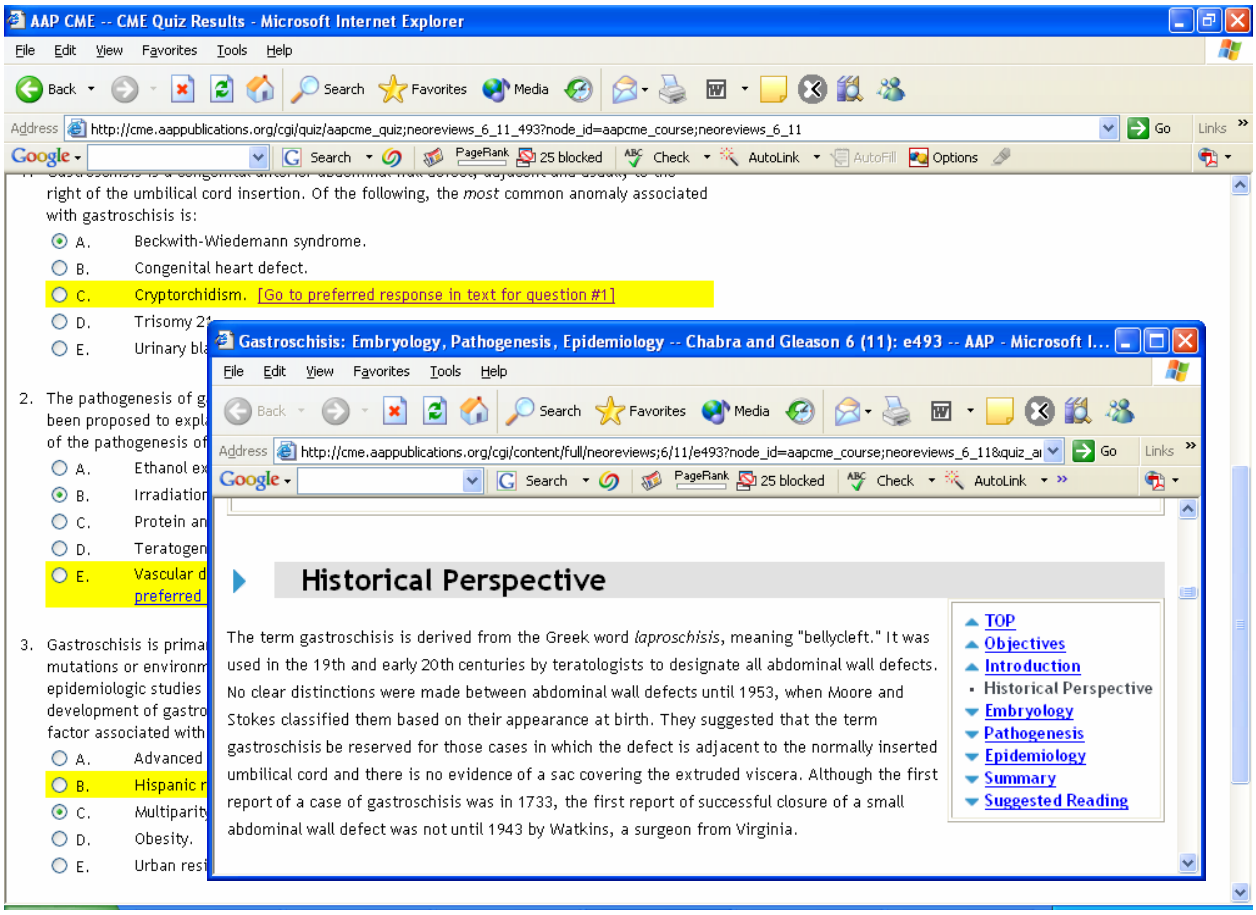
A link takes learners to a page listing the quizes corresponding with the journal CME articles. Completion of the quizzes is required for credit.

The quizzes provide a series of multiple choice questions.



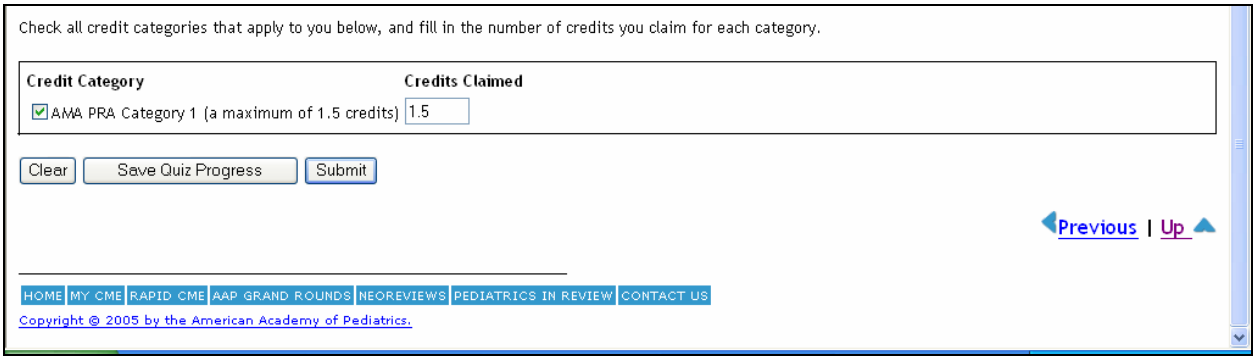
Quiz for Journal CME

After the learner submits her answers, feedback is provided on the incorrect answers. A link allows the learner to review the preferred response within the context of the article text.



Feedback for Incorrect Answers

After completing the required quizzes, the learner is allowed to claim credit for the CME activity.



Form to Claim CME Credit

3. Recommendations

3.1 Accreditation

The Accreditation Council for Continuing Medical Education (ACCME) has Essential Areas and Elements defined within their accreditation requirements. Journal CME must comply with all requirements outlined in the Essential Areas and Elements and the ACCME Accreditation Policies. Journal CME must meet all requirements for enduring materials, including learner evaluation of the activity. In addition to those more general requirements, there are also

specific accreditation requirements that apply to Journal-based CME, which are stated below.

1. The ACCME does not consider a journal-based CME activity to have been completed until the learner documents participation in that activity to the provider.
2. The learner should not encounter advertising within the pages of the article or within the pages of the related questions or evaluation materials.

Ensuring compliance with these journal-specific requirements in the online environment calls for some additional features and specific decisions about how the software system should administer the CME. MedBiquitous makes the following practical recommendations.

1. Require user log-in. This facilitates documentation of learner participation.
2. Provide a post-test. This documents the learner participated in the CME activity. Successful completion of the post-test must be recorded and transmitted back to the accredited CME provider.
3. Provide an evaluation survey to learners at the end of the activity. Survey data must be recorded and transmitted back to the accredited CME provider.
4. Ensure that journal-based CME is free of advertisements. This may require that journal-based CME delivery be separate from the usual online journal article, or it may require special code to prevent the appearance of any advertisements.

For a complete description of ACCME requirements, see http://www.accme.org/.

The Accreditation Council for Pharmacy Education has similar requirements for journal-based CE and other types of home study.

1. The provider must provide evidence of learner participation in the form of either a post-test, evidence that learners attests to completion of a study group, or completion of a written evaluation or critique of the program and its relevance.
2. Post-tests must have a pre-established minimum level of proficiency and may not provide the answers with the questions. Feedback, including correct answers, may be provided after the individual has completed the exercise.
3. The provider should implement interactive learning components where appropriate.

3.2 Pedagogy

Journal articles provide a wealth of information to learners, but sound pedagogical practices can help learners to acquire this new knowledge and apply it to their professional practice. The following pedagogical techniques are recommended for online journal-based CE.

1. Provide clear, concise learning objectives that state what the learner should be able to do, know, or feel at the end of the instruction. Use verbs that describe actions such as define, describe, identify, apply, interpret, analyze, plan, and evaluate.
2. Avoid including the word “not” in multiple choice questions or phrasing questions negatively (for example, which of the following is not a treatment for hypertension). Learners often read over the word not, even if it is bolded or capitalized.
3. In addition to a post-test, consider providing interactive exercises after article sections to reinforce learning. If a journal article is several pages long, such learning checks can help learners identify key points and increase learner retention of important information.
4. If a post-test question requires further information than was provided in the journal article or addresses a particularly complex or difficult topic, provide a hint that will help learners navigate the complexity of the topic or think through the test question.
5. Require that a learner answer a minimum of 75% of post-test answers correctly.
6. Provide explanations to learners for post-test questions. The feedback may include a link to the relevant

text within the journal article, but feedback should include more information about why the correct answer is correct, why incorrect answers are incorrect, and the importance of the topic that the question addresses.

7. Include references to other activities or articles that will allow the learner to learn more about the topic.

3.3 Authoring Journal CME Content

At this point there is no industry-wide standard for the content of journal-based CME materials. HighWire Press has developed and made publicly available their own XML DTD for publishing journal-based CME content. In addition, the IMS Global Learning Consortium has a developed the Question Test Interoperability (QTI) specification for question and test information and corresponding reports. The QTI specification is over 1600 pages. A shorter version, called QTI-lite, has been developed to provide a simpler format for assessment interoperability. QTI has been used to enable the interchange of assessment materials among authoring systems, assessment delivery systems, and item banks.

3.4 Credit Reporting and Tracking

Often CE providers want to track learners journal-based CE together with other types of CE offered. This facilitates administration for both the provider and the learner, who has the opportunity to create a CE transcript that may support licensing and certification requirements.

MedBiquitous recommends using the MedBiquitous Activity Report specification for the transmission of journal CME credit data between organizations and systems. The specification provides a consistent way of encoding the following types of data:

- Identifying information about the clinician participating in the activity
- The organization that serves as the accredited provider of the activity
- Activity name.
- Module name
- Status of the activity (registered, completed, expired)
- Date the individual started the activity
- Date the individual ended the activity
- Due date for the activity
- Date the individual registered for the activity
- Date the individual completed the activity
- Date the individual's access to the activity expired
- Results of the individual's participation in the activity
- CE credits the individual received as a result of participation
- Unique identifier for the individual's participation in this activity (to prevent double counting of credits)

The following sample document illustrates how Activity Report can be used for journal-based CME. A unique identifier is assigned for an individual's participation in a CME activity. This unique identifier prevents double counting of CME credits by tracking systems, including those run by the CME provider or certifying board.

```
<?xml version = "1.0" encoding = "UTF-8"?>
<ActivityReports xmlns = "http://ns.medbiq.org/activityreport/v1/" xmlns:hx =
"http://ns.medbiq.org/lom/extend/v1/" xmlns:m = "http://ns.medbiq.org/member/v1/"
xmlns:n = "http://ns.medbiq.org/name/v1/" xmlns:xsi =
"http://www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation =
"http://ns.medbiq.org/activityreport/v1/ activityreport.xsd">
   <DateCreated>2005-08-17</DateCreated>
   <ActivityReport>
      <ReportingOrganization>HighWire Press</Organization>
      <Member>
```

```
            <m:UniqueID domain = "American Academy of Pediatrics">
              12345678
            </m:UniqueID>
            <m:UniqueID domain = "HighWire Press">87654321</m:UniqueID>
            <m:Name>
                <n:FirstName>Jane</n:FirstName>
                <n:FamilyName>Doe</n:FamilyName>
            </m:Name>
        </Member>
        <Activity>
            <ProviderOrganization>
              American Academy of Pediatrics
            </Providerorganization>
            <ActivityName>NeoReviews</ActivityName>
            <Module>
                <ModuleName>NeoReviews, Vol. 6, No. 7, July 2005</ModuleName>
                <Status>Completed</Status>
                <StartDate>2005-07-25</StartDate>
                <CompletedDate>2005-08-17</CompletedDate>
                <Results>Passed</Results>
                <CreditCertificate>
                    <CreditReceived providerAccreditation="ACCME"
        activityCertification="AMA PRA category 1" creditType="CME"
        unit="Credits">1.5</CreditReceived>
                    <CreditID>heid:accme:aap.org:7896:12345678<CreditID>
                </CreditCertificate>
            </Module>
        </Activity>
    </ActivityReport>
</ActivityReports>
```

For complete information on Activity Report, see the current specification at:
http://www.medbiq.org/working_groups/activity_report/ActivityReportSpecification_03.pdf

Once an online publisher has created an Activity Report XML document, the document should be available for download via an extranet or be made available to the accredited CME provider via a Web service.

3.5 Evaluation Mechanisms and Reporting

When creating surveys to evaluate learner reaction to the activity, certain evaluation questions should be asked consistently. The following survey items are a subset of the MedBiquitous Medical Education Metrics (MEMS) specification and are based on consensus opinion of the MedBiquitous Metrics Working Group. These questions or their equivalent are recommended. Unless otherwise noted, it is recommended that survey items use a five-point Likert scale (strongly agree, agree, neutral, disagree, strongly disagree).

- The activity achieved its stated educational objectives.
- The activity was relevant to my practice and my learning needs.
- I plan to change my current practice based on what I learned in the activity.
- The activity validated my current practice.
- The activity presented sufficient scientific evidence to support the content presented.
- The activity was free of commercial bias towards a particular product or company. (yes/no)

CME providers may benefit from asking a consistent set of survey questions so that surveys may be compared easily

across CME formats and publications. These basic questions may be supplemented with questions specific to the content of the activity.

MedBiquitous recommends using the MedBiquitous MEMS specification to transmit reports of aggregate evaluation data from the online publisher or service provider to the accredited CME provider. The following sample MEMS document illustrates how MEMS may be used for journal-based CME to both summarize evaluation data and provide aggregate learner participation metrics for a set period of time.

```
<?xml version = "1.0" encoding = "UTF-8"?>
<MedicalEducationMetrics xmlns = "http://ns.medbiq.org/metrics/v1/" xmlns:xsi =
"http://www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation =
"http://ns.medbiq.org/metrics/v1/ medicaleducationmetrics.xsd">
   <ProviderProfile/>
   <ActivityDescription>
      <lom:lom xmlns:lom = "http://ltsc.ieee.org/xsd/LOM">
         <lom:general>
            <lom:identifier>
               <lom:catalog>URL</lom:catalog>
               <lom:entry>
                 http://neoreviews.aappublications.org/content/vol6/isue7/
               </lom:entry>
            </lom:identifier>
            <lom:title>
               <lom:string language = "en">
                 NeoReviews, Vol. 6, No. 7; July 2005
               </lom:string>
            </lom:title>
         </lom:general>
      </lom:lom>
      <Modality>online</Modality>
      <ReportingStartDate>2005-07-01</ReportingStartDate>
      <ReportingEndDate>2005-07-31</ReportingEndDate>
   </ActivityDescription>
   <ParticipantActivityEvaluation>
      <EducationalObjectives>
         <ObjectiveAchievement>
            <EducationalObjective>
              all stated learning objectives
            </EducationalObjective>
            <AchievedEducationalObjective>
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               <Agree>35</Agree>
               <NeitherAgreeNorDisagree>4</NeitherAgreeNorDisagree>
               <Disagree>5</Disagree>
               <StronglyDisagree>1</StronglyDisagree>
            </AchievedEducationalObjective>
         </ObjectiveAchievement>
      </EducationalObjectives>
      <RelevantToLearningNeeds>
         <StronglyAgree>30</StronglyAgree>
         <Agree>20</Agree>
         <NeitherAgreeNorDisagree>5</NeitherAgreeNorDisagree>
         <Disagree>4</Disagree>
```

```
            <StronglyDisagree>1</StronglyDisagree>
         </RelevantToLearningNeeds>
         <PlanToChangePractice>
            <StronglyAgree>1</StronglyAgree>
            <Agree>45</Agree>
            <NeitherAgreeNorDisagree>5</NeitherAgreeNorDisagree>
            <Disagree>9</Disagree>
            <StronglyDisagree>0</StronglyDisagree>
         </PlanToChangePractice>
         <ValidatedCurrentPractice>
            <StronglyAgree>9</StronglyAgree>
            <Agree>0</Agree>
            <NeitherAgreeNorDisagree>5</NeitherAgreeNorDisagree>
            <Disagree>46</Disagree>
            <StronglyDisagree>0</StronglyDisagree>
         </ValidatedCurrentPractice>
         <EvidenceBasePresented>
            <StronglyAgree>15</StronglyAgree>
            <Agree>35</Agree>
            <NeitherAgreeNorDisagree>5</NeitherAgreeNorDisagree>
            <Disagree>4</Disagree>
            <StronglyDisagree>1</StronglyDisagree>
         </EvidenceBasePresented>
         <FreeOfCommercialBias>
            <Yes>45</Yes>
            <No>15</No>
         </FreeOfCommercialBias>
      </ParticipantActivityEvaluation>
      <ParticipationMetrics>
         <TargetedAudience>120</TargetedAudience>
         <RegisteredParticipants>75</RegisteredParticipants>
         <NumberOfParticipantsReceivingCredit>
           60
         </NumberOfParticipantsReceivingCredit>
         <CreditsAwarded providerAccreditation = "ACCME" activityCertification = "AMA
         PRA category 1" creditType = "CME" unit = "Units">
           120
         </CreditsAwarded>
         <NumberOfDistinctHostsOrVisitors>75</NumberOfDistinctHostsOrVisitors>
         <NumberOfSuccessfulPageRequests>678</NumberOfSuccessfulPageRequests>
         <NumberOfParticipantsCompletingActivity>
           60
         </NumberOfParticipantsCompletingActivity>
      </ParticipationMetrics>
   </MedicalEducationMetrics>
```

For complete information on MEMS, see the current MEMS specification at:
http://www.medbiq.org/working_groups/metrics/MEMSSpecification.pdf

If a single activity is eligible for more than one type of continuing education, repeat the CreditsAwarded activity to indicate the number of credits awarded for each type of credit.

Once an online publisher has created a MEMS XML document, the document should be available for download via an extranet or be made available to the accredited CME provider via a Web service.

4. Frequently Asked Questions

The following are questions that frequently come up in the committee designing journal-based CE or CME for a publication.

1. **How can providers conduct needs assessment for journal CME?**
   Needs assessment is often included in the learner survey in the form of a question that asks what topics the learner would like to see covered in future CME. Other types of needs assessment are certainly feasible as well.

2. **Should the post-test questions include hints?**
   Hints are certainly controversial among educators. Many feel that they should not be provided. Other feel that hints are acceptable as long as they don't give away the answer.

3. **Should hints provide the article text where the right answer can be found?**
   The content of hints is another controversial topic. Some feel that including the text of the article where the right answer can be found gives away too much information.

4. **Should the post-test provide remediation for wrong answers or just explain right answers?**
   Remediation for wrong answers can be an important pedagogical tool that helps to address learner misconceptions, but it takes time for test authors to write effective remediation.

5. Resources and References

The Accreditation Council for Continuing Medical Education. *Journal CME Policy.*
http://www.accme.org/index.cfm/fa/Policy.policy/Policy_id/2158dda4-f72c-4300-8a6e-0039f1657fe8.cfm
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[Accessed August 17, 2005]

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http://www.medbiq.org/working_groups/metrics/MEMSSpecification.pdf
[Accessed August 17, 2005]

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[Accessed August 17, 2005]