Headache Education - A “Case” for a Better Way!

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Overview

• *Traditionally*, doctors have been taught to learn medicine by:
  – Lectures and laboratory work
  – Which emphasize certain topics or ideas.

• Any thoughtful *clinical teacher* knows the best *laboratory* is the *patient* and their *case* is the best way to teach clinical medicine.
Case Based Learning

• PBL or problem based learning, is a popular teaching methods in medical schools today…
  In headache PBL has been studied in small groups and on-line, with some success.

• CBL or case based learning is a major teaching method in CME and is playing a major role in headache teaching worldwide.
Tuesday Morning Lectures
The Learning Triangle

Teacher

Subject

Student
Case Can Be ‘Simple’…. 

• Medical Student with “migraine” preceded by three auras:
  – Visual blurring x 20 min
  – Numbness right face, tongue and arm x 20 min
  – Visual spots times 20 min

• Followed by throbbing headache either side..

• Normal examination and on OCP
Questions on Case

- What is prolonged aura?
- Does she have prolonged aura?
- Should she be on the OCP?
- Should she take a triptan?
- Are triptans safe?
The “Case”....

• The *case* is the international currency of communication that *unites* learners of medicine worldwide

• When problems arise in the case *context*, the learning is more *relevant* and knowledge *sticks* with the learner...
Typical Cases....

‘Over a period of time, each patient noticed that the attacks were appearing more frequently and that the response to the same dosage became less dramatic. Each patient gradually began to increase the dosage of the medicament, some on the advise of the physician, others without his knowledge. With differences in time, each patient arrived at the same end-point, namely daily episodes of migraine and daily intake of ergotamine.’....
Arnold P. Friedman
Neurologist and
Headache Specialist

In 1945 founded the Headache Unit at Montefiore Hospital in NYC – the first specialized clinic in the world.

Clinical Cases

• **Cases** have *served* the test of time as a most important way to learn medicine and convey knowledge among peers.

• In age of **evidence** based medicine (EBM), it may seem *odd* to use **cases** to teach complex ideas and concepts..
The Idea Is Not New…

“In what is called the natural method of teaching, the student begins with the patient, continues with the patient, and ends his studies with the patient, using books and lectures as tools, as means to an end”.

Sir William Osler, The Hospital as a College (1928)
Not Knew At All!

“Probably in the not far distant future we will crawl out of our old methods of education as a snake sheds its skin, and reorganize a new plan.”

Charles Mayo, 1927

Special thanks to D. Capobianco MD, Mayo Clinic, Jacksonville
Lectures and Laboratory

• Lectures and laboratory study are still important for many reasons...
• But doctors study cases and what they learn stays with them..

Lectures are best used for the transference of condensed knowledge about the important aspects of a case or topic..
Use of Case Knowledge

• Condensed knowledge is learned by expert clinicians over many years and stays with them; like other procedural memories this accumulates.

• When presented in the right context, as part of a case, such knowledge is invaluable to the learner.
The Use of Science...

- **Science** would not advance without laboratory work or formal scientific methods

- Each **case** is an **experiment** and requires individual consideration to understand the relevance of the case in context to broader knowledge base....
Clinical Knowledge

• Acquisition of clinical knowledge depends on texts and other standard methods; in time pattern recognition or a heuristics occurs.
• If we have seen something before we are more likely to recognize it again!
• Experience plays major role cases: Careful not to anchor approach on the last case seen or our best or worst experiences.
• Combined with EBM, may bring the best results.
Reality of Diagnosis…

• Headache assessment is a predominantly *qualitative* diagnostic experience, mainly based on a *history*.
  
  Must see many patients with migraine to understand the full spectrum, but few cases of SUNCT to remember this rare diagnosis.

• In *secondary* headache disorders, a broad clinical database is needed to, so we employ more imaging and tests to diagnosis.
The traditional didactic learning format predominates in CME today.

A typical CME session consists of an expert lecturer delivering information to a group of physicians in a top down fashion....

After D. Davis MD. University of Toronto CME
Failure of lecture method...

- Knowledge relayed is *not* delivered in a way that can be *applied* to practice.
- Physicians have to *translate* information from experts and find ways to apply in practice situations *on their own*.
- Given the *conditions* most physicians face in their practice, this does *not* happen and learning *fails* to occur.
Case Based Learning

- **PBL and CBL** draws their theoretical foundation from **cognitive** psychology.
- **PBL** approach has the following **effects** on those who **participate**........

Medical Education Unit, Dalhousie
Linking Knowledge…

• Learners use *past* knowledge and *experience* to seek new information related to the problem *at hand*.

• Knowledge past and present is *restructured* to fit the problem. All knowledge is structured in memory.

Medical Education Unit, Dalhousie
The problem and its resolution cues learner when similar problems arise in practice.

Learners tend to be more internally motivated to learn when the learning can be seen to be relevant to what they need to know.
Time to Process...

• PBL with its presentation of *problems* is believed to result in *increased* learner motivation
• Increases the *time* spent processing and *storing* information in memory ready for retrieval when needed.

Medical Education Unit, Dalhousie
Adult Education Principles.

• **Needs Assessment**: motivated to learn when their learning needs are met.

• **Relevance**: motivated to learn when focus of learning is life situations & not topics.

• **Experience Based**: motivated to learn when context of learning is their experience.

• **Self-Directed**: are more motivated to learn when they direct & evaluate their learning.
Role of Educator

• The role of the educator is to *facilitate* the learning rather than transmit knowledge and evaluate learners based on their ability to *regurgitate* it.
Clinical Reasoning Process

• Is the **foundation** of problem solving and decision-making in medicine.

• Medical educators maintain that the clinical reasoning process is characterized by **specific** behaviours.

• These behaviours can be **learned** and evaluated.....
Process Behaviours

- **Hypothesis** generation
- **Inquiry** strategy and clinical skills
- **Problem** formulation
- **Diagnostic** and **therapeutic decisions**
- **Clinical reasoning** process forms basis for the PBL/CBL methodology.
“In a perfect world, health care information would flow in a linear fashion. In reality, the flow of information from one level to another (eg., from researcher to policy maker to clinician) is disorderly...and (even) chaotic.”

Battista et al, Disseminating Research/Changing Practice, 1994
PBL in CME

- The implementation of PBL/CBL in CME is still its infancy
- Educators believe that PBL in CME has potential to become an effective learning format for physicians.

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What is the Evidence?

• What's the evidence that these methods produce different or better physicians?

• Several reasons for such disbelief….
  
  • Confounding variables, education is contamination
  • Educational research methods are qualitative and don’t answer essential quantitative questions….
  • We know, as clinician-scientists, that qualitative research is suspect….
Analysis of covariance between groups on the post-test, using the pre-test result as covariate, showed significantly:

- Greater knowledge in the PBL group. Mean post-test scores also were significantly higher for the PBL group.

- The PBL group's satisfaction with several programme dimensions was significantly higher than that of the lecture group.
**TABLE 1. Mean Ratings of Items Addressing Case Discussion in the Bulletin Board and Overall Course by 15 Physician Participants in a CME Online PBL Program, Dalhousie University, 1999**

<table>
<thead>
<tr>
<th>Item</th>
<th>Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>The case content was applicable to my practice.</td>
<td>4.4 (0.7)</td>
</tr>
<tr>
<td>The case stimulated my thinking about patients in my practice.</td>
<td>3.8 (0.9)</td>
</tr>
<tr>
<td>The questions in the case clarified my understanding of the content.</td>
<td>3.7 (0.6)</td>
</tr>
<tr>
<td>The bulletin board was useful.</td>
<td>3.5 (1.2)</td>
</tr>
<tr>
<td>I received enough instruction in the use of the bulletin board.</td>
<td>3.6 (1.0)</td>
</tr>
<tr>
<td>I felt comfortable participating in the bulletin board.</td>
<td>3.6 (1.4)</td>
</tr>
<tr>
<td>Participating in discussions enhanced my understanding of the subject.</td>
<td>3.8 (0.9)</td>
</tr>
<tr>
<td>Discussions added value to the module.</td>
<td>3.8 (1.0)</td>
</tr>
<tr>
<td>The instructor responded promptly to my questions.</td>
<td>4.1 (0.7)</td>
</tr>
<tr>
<td>The on-line case-based format is an effective learning method for me.</td>
<td>3.8 (0.9)</td>
</tr>
</tbody>
</table>
The Dissonance…

• On one hand, the **majority** of what goes by the name of CME in medical schools, professional societies are **didactic** courses…

• On the other hand, the **research** is clear that these methods of CME do **not change** physician performance and/or health care outcomes

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IHC
The 13th Congress of the International Headache Society
28 June - 1 July 2007, Stockholm, Sweden

Second Announcement

www.ihc2007.org
Canadian Headache Society

• Migraine Guidelines Course for family doctors and pharmacists...
• Communications Skills Workshops for Neurologists...
5th Annual National Neurology Residents Headache Course

Headache Biology, Clinical and Management Issues Including Interactive and Case Based Learning

Montreal Neurological Institute
October 18-20, 2002

Co-chaired by:
Dr. Allan Purdy, Halifax
Dr. Werner Backer, Calgary

Special Guest Faculty:
Dr. Peter Goadsby, Institute of Neurology at Queen's Square, London UK
Dr. Fred Shapfell, New England Center for Headache, Stamford, CT
Dr. David Dodick, Mayo Clinic, Scottsdale, AZ

Register Now
THE AMERICAN HEADACHE SOCIETY NEUROLOGY RESIDENT PROGRAM
A Novel Approach to Case Based Education and Meeting the Requirements of the ACGME Outcomes Project

David Capobianco, MD, Mayo Clinic; David Dodick, MD, Mayo Clinic; Jonathan Gladstone MD, University of Toronto; Elizabeth Loder, MD, Spaulding Rehabilitation Center; Allan Purdy, MD, Queen Elizabeth II Health Science Center; Nabih Ramadan, MD, Rosalind Franklin University of Medicine; Stephen Silberstein, MD, Jefferson Headache Center; Lisa Bance, RedActive Inc.

CONSEQUENCE-BASED LEARNING

Accept a NEW CASE

User is confronted with a SET OF CHOICES relevant to the case under consideration

Resident makes a CHOICE

NEXT CHOICE

CBL

Receive user choice(s)

Select Patient / System Response

Update Skill Scores

Evaluate user's choice

Rules

Skill Array Based on the Case Learning Objectives

Set of variables that keep track of the scores of the skills being assessed throughout the case

Set of variables for poor, average, and superior resident performance

Resident Feedback

Rules

Case-specific Skill Array

Customized Performance Feedback

Customized References to Learning Materials

END OF CASE
The Case...almost forgot!

- Aura is reversible focal neurological symptoms that usually develop gradually over 5-20 minutes and last for less than 60 minutes and prolonged aura was >60m in prior IHS (1988)
- She should probably be off OCP
- Her triptan “stops” aura but not headache....
- Triptans are safe, generally.....
THE “Learning Triangle”!

Interested Teacher

Interesting CASE!  Interested Student
Why does it matter?

• Simply put, everything we do and every interaction in clinical medicine is picked upon by the learner - teachers have tremendous influence for good........

• It is never a disease or a test for that matter that sticks in the learners head...it is the memory of being ‘taught’......and how it was done in the context of a ‘patient!’

Purdy, RA. Personal communication, 2010
In Conclusion…

• Headache is a common disorder with major medical and social consequences for the patient and society…

• Important to pursue teaching strategies that maximize the learner’s ability to gain relevant knowledge in the most memorable way.

• CBL is here to stay in headache education!

• Cases are a better way, but not the only, to learn headache medicine…..
This lecture is over....thanks!