Case-based Learning (CBL): Improving Student Engagement through Connecting Early Learning with Graduate Contexts

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Overview of Session

• What is CBL? Why use CBL?

• Practical Implementation of CBL

• Challenges and Potential Solutions
What is Case-based Learning (CBL)?

‘CBL is a learning and teaching approach that aims to prepare students for clinical practice, through the use of authentic clinical cases. These cases link theory to practice, through the application of knowledge to the cases, and encourage the use of inquiry-based learning methods.’


? Does CBL = Group-based learning
Why use Case-based Learning (CBL)?
Why use Case-based Learning (CBL) in the Medicine Program?

- Places early learning in a clinical (graduate) context
- Facilitates integration of existing knowledge with new knowledge
- Facilitates integration of knowledge from multiple disciplines
- Develop clinical (critical) reasoning skills
- Develop skills for working effectively in health-care teams
- Preparation for clinical practice
- The majority of health professional students and teachers report that they enjoy learning via CBL
CBL in the Medicine Program

• Graduate entry, 4-year, Doctor of Medicine (MD) Program
• CBL is the cornerstone of the curriculum in years 1 & 2
• 500 students per year -> 50 CBL groups
• Groups meet twice a week for 2-2.5 hours each tutorial
• Facilitated by an industry-qualified tutor
CBL Cycle

CBL

Learning resources

Tutorial 1

‘Main’ clinical case relevant to KLIs of week

RAP session with identification of 2-3 ‘GIFT’s

Learning resources

Tutorial 2

Presentation of GIFTs

2 ‘Additional’, related, pre-prepared cases

PBL

Learning resources

Tutorial 1

Commence clinical ‘case’ relevant to KLIs of week

Group identification of 8-10 ‘FQ’s

Tutorial 2

Presentation of FQs

Final case triggers for discussion and closure

RAP: Reflection & Planning
GIFTs: Group Identified Focus Tasks
FQs: Focus Questions
Trigger 1

- You are the intern on duty in the Emergency Department at a metropolitan hospital when a man in his early 30s is brought to you. He looks distressed and is bending over with both arms wrapped around his abdomen. He apparently speaks no English, but is accompanied by a male family member who points to the patient's abdomen and says “belly ache!”
## General Process

<table>
<thead>
<tr>
<th>CUES</th>
<th>Hypotheses</th>
<th>Mechanisms</th>
<th>Need to Know</th>
<th>Gifts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>Systems/Organs</td>
<td>Neoplastic growth</td>
<td>Location, nature, timing, severity</td>
<td></td>
</tr>
<tr>
<td>Approx. 30 yrs</td>
<td>Stomach; Small intestine; Large intestine; Liver; Gallbladder; Pancreas; Heart/Aorta; Kidneys; Reproductive</td>
<td>Obstructed bowel lumen</td>
<td>Associated</td>
<td></td>
</tr>
<tr>
<td>Abdo pain</td>
<td>Pathological processes</td>
<td>Build-up of gas/fluid proximally</td>
<td>- diarrhoea?</td>
<td></td>
</tr>
<tr>
<td>No English</td>
<td>Vascular – ischaemic colitis</td>
<td>Stimulation of stretch receptors</td>
<td>- vomiting?</td>
<td></td>
</tr>
<tr>
<td>Accompanied by family member</td>
<td>Infective - gastroenteritis</td>
<td>Pain</td>
<td>- fever?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Inflammatory – Crohn’s</td>
<td></td>
<td>- bleeding?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Neoplastic – bowel cancer</td>
<td></td>
<td>Past medical hx</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Etc.</td>
<td></td>
<td>Meds / allergies?</td>
<td></td>
</tr>
</tbody>
</table>

## GIFTS

- Interpreter?
- Etc.
Discussion Starters

• What systems/organs may be responsible for this patient’s pain?
• How does visceral pain differ from somatic pain?
• What should we ask when taking a history to help us work out what the problem is?
• What constraints are placed on the history-taking process by the fact that the patient is unable to speak English?
• What additional difficulties face patients of CALD (culturally and linguistically diverse) backgrounds who present for medical treatment?
What our students say about CBL
What our students say about CBL

• “CBLs get you thinking and applying principles learned in lectures and in learning materials. I like that mental/cognitive exercise.”
• “The CBL case learning linked to the topics of the week allowed practical application of the week’s content.”
• “CBL tutorials were fantastic; a great learning opportunity and an excellent way to develop clinical reasoning.”
• “The CBL setup is brilliant. Such a good environment for learning.”
• “The CBL sessions were very helpful for deepening my understanding of the course material...”
• “I really enjoyed the CBL as I felt it helped draw together all that we were learning into the clinical environment.”
What our students say about CBL

• “(CBL) seemed to put into practice what we learned in our lectures which is very different to most undergraduate courses, as it made us collate all the material in our minds which not only helped the learning but also started making us feel like ‘real doctors’ and a sense of what we’re working toward.”
What our students say about CBL

- Removes the ‘tunnel vision’ effect of PBL
- More opportunities for development of clinical reasoning skills
- More efficient utilisation of time
- Enhanced student engagement and enjoyment

“CBL is the best thing ever!”

Student preference (n=225)
Alternate CBL settings?

- Individual student format? Online?
**Mr Preston’s Triage Notes**

### Progress Notes

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>26 November</td>
<td>Pt presentation</td>
<td>75 YO male W BIBA</td>
</tr>
<tr>
<td>1600</td>
<td>RN Smith</td>
<td>P-C collapsed &amp; confused</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Found by wife on kitchen floor at home when she returned from a day of shopping</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Conscious, but having difficulty speaking</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Unable to move R) arm &amp; leg</td>
</tr>
<tr>
<td></td>
<td>Past med hx</td>
<td>Type 2 Diabetes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>HT</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Smoked 20 cigarettes/day for 50 yr</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Preliminary assessment by QA5 - vital signs stable</td>
</tr>
</tbody>
</table>
Alternate CBL settings?

- Individual student format? Online?
- Team-based Learning model? (TBL)
Team-based Learning

- In lecture
- Students in e.g. 10x teams of 6
- Triggers presented from the front
- 2-3 “roving” facilitators
Practical Implementation of CBL
1. Decide your setting

• Learning environment
  ➢ Tutorial, lecture, online....

• Group size
  ➢ Individual, pairs, small vs. large group....

• Frequency
  ➢ ‘1 plus 2’ model, weekly, end of course ‘module’....

• Facilitation
  ➢ Lecturer, tutors, peer-led, written....

• Time allocation
2. Identify your objectives … and therefore your case

• “Start with the end in mind”
• Consider Learning Outcomes
• Consider prior knowledge – pre-requisites, earlier learning in the same course, what preparation will be set
• Consider opportunity for integration – within own course, with other courses/disciplines
• Consider common and important graduate scenarios
For consideration …

• Will you mandate participation?
• Will you assess?
3. Writing Your Scenario - Triggers

• **Keep time allocation** in mind from the start
  – MD program usually around 4 triggers per hour in small group tutorial setting

• **Have an overall idea** of the scenario: think objectives & relevance
  – start with the skeleton, then flesh it out with the details

• **Keep initial trigger broad**; drip feed with subsequent triggers

• **Don’t overload** the triggers with information but ensure enough is provided for students to address objectives (and is realistic)

• **Provide some form of scenario closure**
  – Expected/unexpected outcome? Scenario to be picked up again at a later date?

• **Review** and review again!
  – Content experts, typos and grammatical errors....
4. Writing Your Scenario – Discussion Process / Discussion Questions

• General Process – what do “hypotheses” and “mechanisms” mean in your discipline?
• Consider the purpose of Discussion Questions
• Remember Bloom’s Taxonomy
• Pose questions that promote deep learning
Finish Well – Reflection and Planning (RAP)

At the end of each session:

• reflect on group process and dynamics – any areas to improve?
• identify “gaps” in learning and how these will be addressed
Challenges? Questions?
## Some Challenges and Potential Solutions

<table>
<thead>
<tr>
<th>Challenges</th>
<th>Potential Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large cohort, resource limitations</td>
<td>Student facilitated CBL, Team-based CBL or “debrief” format</td>
</tr>
<tr>
<td>Tutor diversity</td>
<td>Tutor training; facilitation rather than ”content expert” approach</td>
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<tr>
<td>Integration with other modules and courses</td>
<td>Effective academic teamwork</td>
</tr>
<tr>
<td>Student Participation</td>
<td>Consider participation assessment options</td>
</tr>
<tr>
<td>Difficult group dynamics</td>
<td>Student training in teamwork; have tutors facilitate CBLs; tutor training</td>
</tr>
</tbody>
</table>
10 TIPS

• Our own top tips from our own CBL implementation experience for you to take away!
• Please contact us with any queries: l.green4@uq.edu.au or sharon.darlington@uq.edu.au
References and Resources

David A. Cohen, Lori R. Newman & Laurie N. Fishman (2017) Twelve tips on writing a discussion case that facilitates teaching and engages learners, Medical Teacher, 39:2, 147-152, DOI: 10.1080/0142159X.2017.1266315
http://dx.doi.org/10.1080/0142159X.2017.1266315

http://dx.doi.org/10.3109/0142159X.2012.680939

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