

## 3.2.1 Introduction to case-based learning



The previous module provided you with best practices and implementation guidelines to facilitate a small group learning CE intervention. In this module, you will learn how to prepare and deliver case-based learning, which can also be delivered effectively in a small group setting.

### Key Terms:

**Active learning:** an instructional design approach that fosters the application of knowledge, analysis, and synthesis by engaging learners through activities such as case scenarios and problem-solving [35].

**Inquiry-based learning:** enables learners to actively participate and construct knowledge through a self-directed learning process and problem-solving skills [36].

**Problem-based learning:** fostering an interactive learning experience that establishes a context focused on clinical practice through presenting and solving real-world cases [37].

# Why facilitate case-based learning?



Case-based learning (CBL) encourages learners to foster a deep approach to learning by moving from the acquisition and reproduction of knowledge to seeking meaning through the **application of knowledge** [38]. In contrast to the traditional didactic lecture-based teaching methods, CBL engages learners to analyze problems presented in authentic cases, make inferences based on information provided, and **make decisions** to **simulate real-world** professional context [39]. CBL education interventions for CE in healthcare require learners to build on their knowledge, collect clinical information, and synthesize complex information to formulate and test diagnostic hypotheses [34].

## Case scenario

The COVID-19 pandemic has contributed to a shift toward a virtual care delivery model; however, this model of care poses new challenges for healthcare providers and organizations. Many healthcare providers have found it difficult to engage with patients and deliver compassionate care virtually. The organization has asked John, a director of CE, to create a case-based learning intervention to help healthcare professionals adopt virtual care for chronic pain management. Case-based learning promotes interprofessional collaboration by sharing experiences and receiving feedback from other care providers. The case-based learning intervention is intended to foster critical thinking, problem-solving, and decision-making skills among clinicians to support this new model of care.

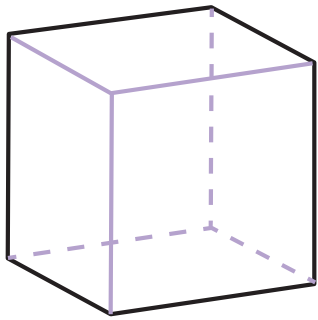


As John is developing a case-based learning session, he considers the following questions:

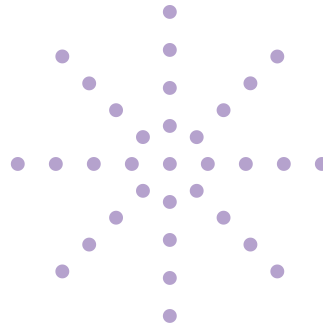
1	What stakeholders would I involve in the design and implementation of a realistic case?
2	How would I deliver the case to engage learners and/or how will I facilitate the sharing and problem-solving of current and active patient problems, and learning from those discussions?
3	What strategies would I employ to encourage critical thinking and reflection?
4	How would I assess learners' knowledge comprehension throughout the session?

# Key enablers

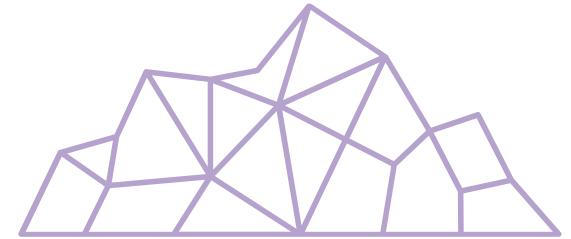
INTERVENTION INTRODUCTION



Develop  
with  
authenticity



Center on an  
active learner  
experience

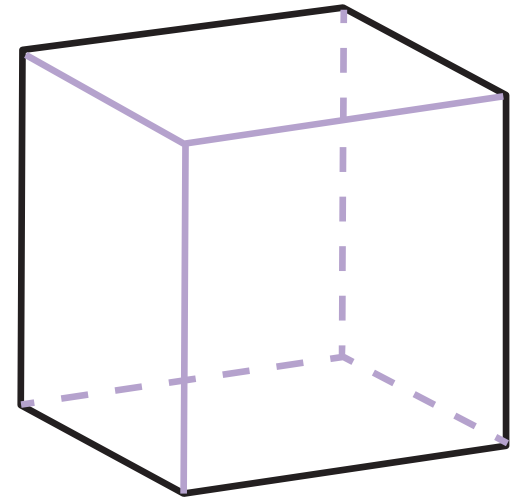


Provide autonomy  
and opportunity for  
improvement

# Develop with authenticity

Case-based learning provides an opportunity to bring authentic experiences into the learning environment. It is important to include representative **stakeholders** in the case-study writing process [38].

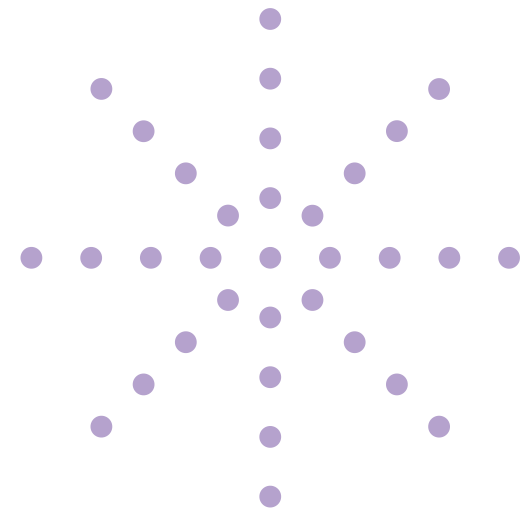
When creating cases, authenticity is best achieved by staying true to a **real-world example**: include the main character with a problem that needs to be solved, describe the problem, and provide supporting data that will lead learners to ask questions [38].



# Center on an active learning experience

Case-based learning centers around an active learner experience [38,40]. Learners are provided with information throughout the case that requires them to synthesize and analyze data. The process allows learners to **make inferences** based on the information provided and **make decisions to simulate a real-world** professional context [38,40]. Concepts of team-based and inquiry-based learning are important to integrate into case-based learning opportunities [38].

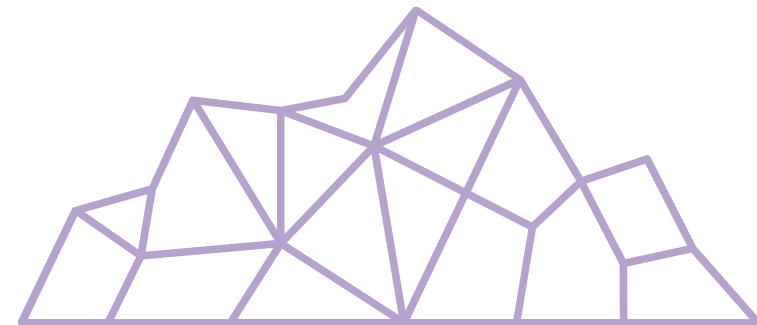
Note: See definition of inquiry-based learning on [page 89](#).



# Provide **autonomy** and **opportunity for improvement**

Through effective facilitation, learners gain autonomy in their learning process. Case-based learning relies on **strong facilitation** to enable learners in their journey [38]. Prompts and questions that guide participants to describe ("what"), analyze ("so what") and propose an action ("now what") are effective facilitator tools in case-based learning that enable autonomy [38].

Knowledge tests allow learners to identify gaps and areas for improvement [38].





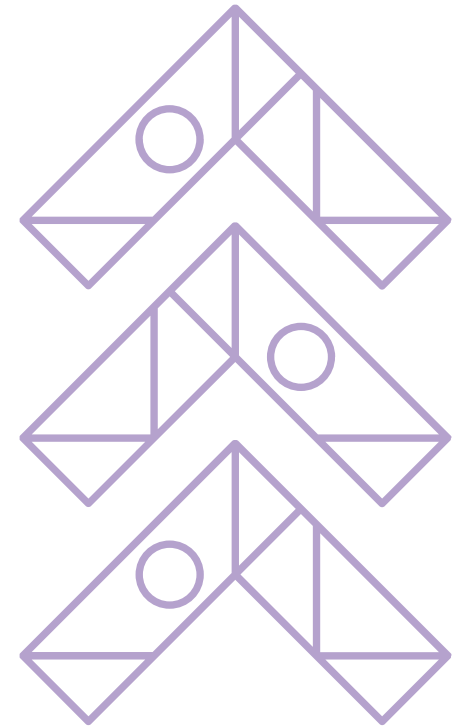


# Importance of case-based learning

- ✓ Clinicians learn best when they are presented with scenarios that are relevant to their type of practice and represent realistic problems that are just at the threshold of their capability.
- ✓ Cases are ideal at allowing an individual learner to identify a key challenge for them that might be different than the challenges recognized by their peers. The stories of clinical cases make them compelling and memorable.
- ✓ Getting feedback on sample cases is akin to using a flight simulator to learn to fly: it's important, safe, and creates lots of opportunity for practice and feedback.

# Formula for success

- 1 Consult with stakeholders to help inform case writing and structure learning objectives.
- 2 Case studies should be reflective of authentic patient cases.
- 3 Select an optimal delivery method (i.e., written case, video case, didactic lecture) based on your learning objectives.

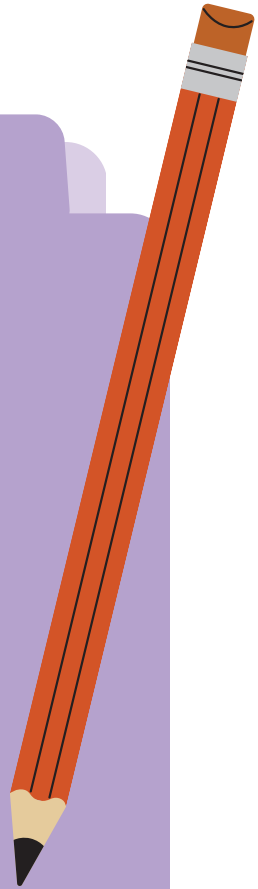
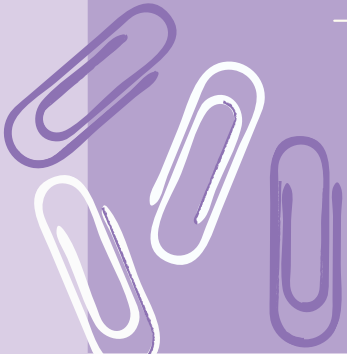


Case-based learning

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## 3.2.2 FRAMING THE PROBLEM AND PREPARATION

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# Types of Cases

There are many different types of cases that can be used as the foundation for a CE session. John considers the following approaches for facilitating a case-based learning activity:

Case Type	Description	Competency
Directed Case	Facilitator presents a case scenario to the learners, followed by a discussion. The discussion is structured based on close-ended questions [41].	Knowledge comprehension of foundational concepts
Dilemma or Decision Case	Learners are presented with a problem to work through and discuss [41].	Problem-solving and decision-making skills
Interrupted Case	Learners are presented with the case in multiple parts and are encouraged to make a decision prior to working on the next component [41].	Problem-solving skills
Analysis or Issue Case	Learners work on analyzing a retrospective case and its outcomes. They reflect on the scenario presented and engage in a discussion [41].	Analytical skills
Spontaneous Case	Learners present a scenario or problem in their current practice setting and engage in a discussion with peers to solve at the moment.	Problem-solving and decision-making skills



# How to develop a case

Below is a common methodology for developing a case [34]; however, this is just one way to conduct a case-based learning session. Sometimes cases can be spontaneously generated by learners or the CE providers or facilitators may identify a helpful case from personal experience that helps illustrate key points.

HOW TO PREPARE

- C** Collaborative approaches to development
- A** Authentic clinical scenarios
- S** Succinct clinical scenarios
- E** Embedding the best available evidence

**CASE METHODOLOGY**

- Enables healthcare professionals to apply their learning in subsequent clinical practice [34].
- Structured approach that can be adapted to meet the needs of various CE programs [34].

# How to develop a case



HOW TO PREPARE

Principle	Collaborative/ Interdisciplinary	Authentic	Succinct	Evidence-based
Description	Integrate an interdisciplinary approach when developing a case [34].	Develop cases that are realistic to healthcare professionals and patients [34].	Cases should be written clearly and concisely [34].	Learning materials and resources presented to resolve the case should be grounded on evidence.
Actions	Form an interdisciplinary team that includes subject matter experts, instructional designers, and clinicians [34].	Engage healthcare professionals and patients in the development process and use real case scenarios [34].	Ensure the cases are reviewed by experts and end-users [34].	Examine current guidelines and literature before developing a case materials.

# Steps to writing a case study

John considers the following steps when writing his case study on virtual care model.

1

## DEVELOP A GUIDE

The guide will include a summary of the literature, gap analysis, and case examples [34].

2

## ORGANIZE A WORKSHOP

Review literature and gap analysis to identify learning outcomes. Members should have a common understanding of the case process [34].

3

## PREPARE AND DRAFT CASES

Write cases based on real scenarios that will be relevant to care providers. Keep cases short and use pseudonyms to protect identities [34].

4

## REVIEW CASES WITH CONTENT EXPERTS

It is important to review the cases for consistency and adequacy in assessing the learning objectives [34].

# Methods for presenting a case



## ✓ Written case

Written cases include an in-depth description and analysis of the clinical scenario [42].

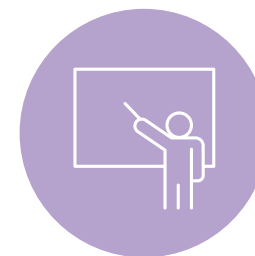
It provides novel insights to support care providers in optimizing the delivery of care. Cases include details such as assessment findings and test reports [42].



## ✓ Video case

Video scenarios are filmed based on cases created by subject matter experts [43].

Learners receive the video case study during the CPD session and are also provided with a manual containing the written case, the learning objectives, and relevant information necessary for group discussions [43].



## ✓ Didactic lecture

A subject matter expert presents the topic and then allows learners to present cases on a voluntary basis [44].

Participants can informally discuss cases that are related to the topic and are engaged in a discussion that can directly impact their practice [44].



# Framing the problem and preparation checklist

## THINGS TO THINK ABOUT WHEN PREPARING CASE-BASED LEARNING

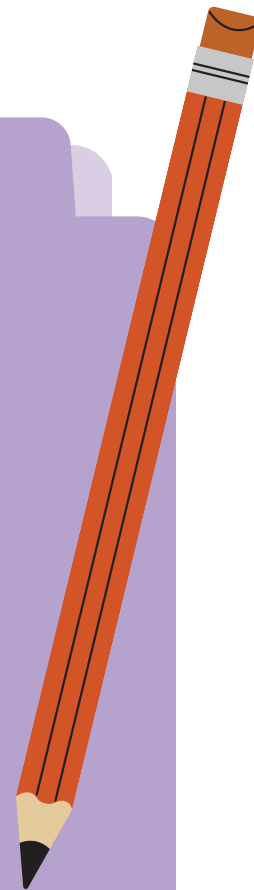
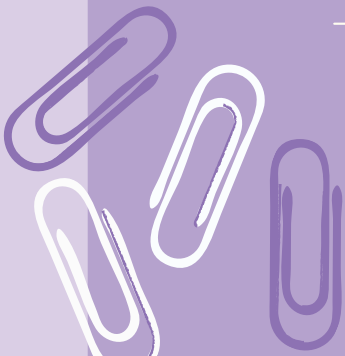
- Engage stakeholders to help inform case study writing and structure learning objectives.
- Conduct a literature review and gap analysis.
- Organize a workshop to identify priority setting and learning outcomes.
- Prepare and draft short cases relevant to the target audience.
- Pilot test the cases with a cohort of learners.

Case-based learning

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## 3.2.3 IMPLEMENTATION GUIDELINES

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# How to facilitate case-based learning

1

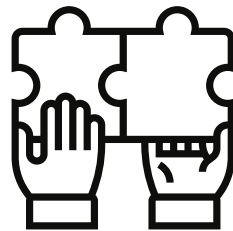
## Present the case



Provide learners with adequate time to read the case.

2

## Discuss the case



Set goals and identify the problem.  
Brainstorm approaches.  
Synthesize solutions and reach a consensus.

3

## Debrief the case



Deliver solutions and engage in knowledge exchange.



# When to present the case

## Learner role

## Advantages

## Disadvantages

Provided **prior** to the CE session and discussed during the CE session

Learners are required to review the case and prepare a solution to the problem identified. During the session, learners work with their peers to come to consensus on a solution [38].

Allows for shorter sessions because learners come to the session prepared with points [38].

Learners come to sessions with solutions rather than working together to come up with a solution [38].

Provided and discussed **during** the CE session

Learners read, analyze and collaboratively propose a solution to the problem identified in the case [44].

Learners work through the case together and can use interdisciplinary perspectives to create a solution [44].

Requires an increased level of learner engagement to direct this process and may require longer sessions to complete the case [44].

Provided **after** the CE session and completed individually

Learners use concepts from the CE session to read, analyze, and complete a case individually [45].

Provides a method to test knowledge uptake during the CE session and learners can work at their own pace [45].


Absence of interdisciplinary perspectives to help analyze the case. Learners will not receive the support of a facilitator [45].

2



## Examine the case through social learning

Cases can be examined through social learning. **Social learning** is a cognitive process, which occurs through the interactions with peers in a social context [46-47]. **Observing the behaviors of others** and **direct reinforcement** are important elements in the transfer of knowledge [46-47]. Role-playing is a valuable strategy to facilitate perspective-taking in solving cases. However, there can be challenges to learner engagement, which could have an impact on the learning process [47].



When developing a case-based learning session to help healthcare professionals adopt virtual care for chronic pain management, John considers strategies for mitigating barriers to learner engagement. The next page explores strategies for how John can develop cases to foster a meaningful learning experience.

2



## Barriers to learning engagement

1 Environmental distractions

2 Fatigue

3 Minimal attention span

4 Overconfidence or uncertainty

5 Lack of interest and motivation

6 Case considered irrelevant or obtuse by the learner

### Mitigation Strategies

Barriers to learning engagement could be addressed:

- Selecting a case that is relevant to your target audience [47]
- Developing cases that provide a unique learning experience and build on existing knowledge [47]
- Establishing trust, which creates a safe space for discussion and critical feedback among peers [40]
- Integrating group activities and providing opportunities for learner interaction [43]
- Utilizing questioning techniques to prompt discussion [20]
- Providing guidance when necessary [20]

## 2



## Facilitator's role in case-based learning discussion

Consider integrating with Facilitation of Small Group Learning Intervention 1

### Create safe environments

- Promote a safe and inclusive environment to encourage and engage learner participation [43].
- Foster an atmosphere in which open exchange of ideas is facilitated [40].
- Outline expectations of respect and inclusion to the group [43].

### Support and monitor participants

- Support learners to relate their work on the case to the learning objectives of the course or session [43].
- Attend to the needs of the learner group and aid when needed [43].

### Facilitate and moderate discussions

- Provide stimulus to the process by asking leading questions, challenging thinking and raising issues that might need to be considered [43].
- Encourage learners to set the pace of the activity [43].
- Ask questions that are open (and avoid questions that have single correct answers).

### Engage learners

- Encourage interactivity through the use of various features in video-conferencing platforms (e.g., chats, polls).
- Ask for feedback from learners to address their learning needs [43].
- Actively listen and validate contributions from group learners [43].

### Demonstrate knowledge of topic

- Discuss with learners to ensure they can connect the topic to their broader clinical practice [43].
- Share professional experience to connect the case with practical context [43].

## 2



# Working through the cases

### Intentional environment setup

- The environment sets the stage for collaboration; therefore, the setup should be meaningful to promote discussion [38,44].
- In-Person:
  - Create an open space by moving tables and chairs around in a conference room
- Virtual:
  - Breakout rooms for small discussions
  - Easy to access video conferencing links

### Promote collaboration

- Engage learners to perform open inquiry through guiding questions and sharing their varying multidisciplinary expertise [38,44].
- When the learning objectives include team-based or interprofessional competencies, create groups that are representative of diverse disciplines and demographics to help plug knowledge gaps [38,44].



## 2



# Working through the cases

## Learner-directed

- Case-based learning operates most effectively when it is learner-directed and facilitator-monitored [40].
- Encourage learners to:
  - Choose how to approach the case
  - Delegate tasks and roles
  - Use their experiences to inform the case analysis

## Check for understanding

- Facilitators play a role in ensuring that learners understand the tasks and topic of the case. If learners have questions, they should first seek answers within their group [40]. However, if the group continues to have difficulty, facilitators can provide some clarification or open-ended questions to guide them [40].
- Ask "Why" or "How" questions to prompt discussion.

3



## Questioning in case-based learning

John uses the following questioning framework to prompt discussion in his session.

DESCRIPTIVE

ANALYSIS

PROPOSED  
ACTION

### "What"

Help learners dissect what has happened in the case and identify what information is available [45].

### "So what"

Detail what is expected of the group and what are different ways they can proceed with the case [45].

### "Now what"

Come up with a plan of action based on the details of the case and discussion [45].

3



## Dissemination of case analysis

The outcomes of case analysis can be varied and will be dependent on the curriculum.

John can consider the following examples to engage learners in synthesizing their case results.

### Written report

Learners:

- Submit the report during or after the session [42].

Facilitator:

- Explains the solution and how it relates to the curriculum [42].
- Outlines the process of case analysis [42].

### Formal presentation

Learners:

- Create a slide deck to present the solution [43].

Facilitator:

- Highlights the steps taken to analyze the case and connect it to the curriculum [30].
- Interacts with session participants by asking for feedback and for any questions they might have [43].

### Informal open-discussion

Learners:

- Build on each other's ideas to explain possible solutions and address challenges [44].

Facilitator:

- Collectively discusses with larger group the process the smaller groups took to approach the case [44].

### Online discussion board

Learners:

- Post their solutions to an online discussion board and openly comment on their peers' solutions [37].
- Peers provide feedback and critique post-session [37].

## 3



## How to debrief the case

Consider  
integrating with  
Reflective  
Learning

Intervention 3

Debriefing is a direct and intentional conversation among the learner group to summarize the session and come to conclusions about the case [37]. It usually takes place after the group has worked through the case and has synthesized the results [37]. John uses the following steps to engage the learners in debriefing the case during his CE session:

- ✓ Prompt learners with questions to get them to reflect on the key takeaways from the case [48].
- ✓ Give individual learners or groups an appropriate amount of time to generate their responses and record answers either on paper or through an electronic poll [48].
- ✓ Share ideas or thoughts about the case between groups or in pairs [48].
- ✓ Engage each pair or group to share their responses with the larger group and participate in an in-depth discussion [48].
- ✓ The facilitator shares their own key takeaways and relates them to the points raised by the learners. At this point, the facilitator fills any gaps and clarifies concepts covered in the case [48].

# Implementation checklist

## THINGS TO THINK ABOUT WHEN DELIVERING CASE-BASED LEARNING

- Consider when to present the case to learners (before, during, or after the session).
- Foster an inclusive and safe learning atmosphere.
- Maximize the transfer of learning by creating a collaborative learning space.
- Incorporate questioning strategies as part of the instructional design to encourage critical thinking and fruitful discussion.
- Select the best approach to disseminate the case analysis and debrief.



Case-based learning

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## 3.2.4 KEY CONSIDERATIONS

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# Group learning **delivery methods**

Here are some considerations when selecting the delivery methods:

	<b>Small group delivery</b>	<b>Large group delivery</b>	<b>Virtual/blended delivery</b>
<b>Description</b>	<ul style="list-style-type: none"> <li>From four to eight participants work on completing the case [49].</li> </ul>	<ul style="list-style-type: none"> <li>Groups larger than 20 learners work on analyzing a case. The session usually integrates a didactic lecture to complement discussion [44].</li> </ul>	<ul style="list-style-type: none"> <li>The use of video conferencing platforms to conduct case-based discussions and activities [50].</li> </ul>
<b>Facilitator role</b>	<ul style="list-style-type: none"> <li>Help guide and monitor discussion [49].</li> <li>Only assist when the group requires help or asks for help [49].</li> <li>Provide feedback to the group and ask open-ended questions to prompt discussion [49].</li> </ul>	<ul style="list-style-type: none"> <li>Present case to the group [44].</li> <li>Active role in facilitating and leading discussion [44].</li> </ul>	<ul style="list-style-type: none"> <li>Mitigate technology difficulties [50].</li> <li>Create discussion groups/breakout rooms [50].</li> <li>Manage learner discussion and encourage participation from all learners [50].</li> <li>Inform participants of video conferencing tools that can be used [50].</li> </ul>
<b>Learner role</b>	<ul style="list-style-type: none"> <li>Engage in active participation [49].</li> <li>Create self-directed plan on how to approach case [49].</li> <li>Be attentive and respectful of group's ideas [49].</li> </ul>	<ul style="list-style-type: none"> <li>Actively participate and contribute to the case discussion [44].</li> <li>Integrate simple large group collaborative approaches such as think-pair-share.</li> </ul>	<ul style="list-style-type: none"> <li>Leverage tools on video conferencing platforms to participate [50].</li> <li>Actively join the discussion with the camera on or participate through the chat box function [50].</li> </ul>

# Challenges: Delivery approaches

## In-person

01

- Unequal or lack of participation can affect case analysis and group discussion [49].
- A facilitator who too actively participates takes away important decision-making opportunities from learners [49].
  - **Mitigation:** The facilitator stays within the role and only monitors.
- Physical Setting: availability of an open and movable setting may not always be an option, which could detract from a case discussion and analysis [49].

## Virtual or blended

02

- Access to technology
- Lack of digital literacy
- Challenge in monitoring virtual learner progress [49].
- Difficulty monitoring active participation and learner engagement if the camera is off [49].
  - **Mitigation:** Set expectations at the beginning of the session; reinforce throughout the session.
- The malfunctioning microphone may limit participation [49].
  - **Mitigation:** Encourage the use of the chat box if the microphone is not working.



# Sample: Planning canvas

KEY CONSIDERATIONS

Who would you engage to develop the case?

When would you present the case?

How would you work through the case?

How would you present the case (before, during or after the session)?

What delivery approach would you select?

How would you debrief the case?

# Consider how you will **evaluate** your CE session

Evaluation is an essential component of a CE session to assess knowledge uptake, identify how learners interacted with the activities, and examine whether learning objectives were effectively translated into practice. It provides an opportunity for both the facilitator as well as the learner to reflect on the session and provide constructive feedback to each other. Check out [Section Four](#) on page [155](#), which provides detailed strategies on how to assess and evaluate your CE interventions.

## Consider the following questions when evaluating and assessing a CE session:

- ✓ How can I assess and evaluate the outcomes of a CE intervention by [engaging stakeholders](#)?
- ✓ What are some evaluation approaches I can integrate into my CE session ([knowledge tests](#), [semi-structured interviews](#), [feedback surveys](#))?
- ✓ What frameworks can be used to inform my evaluation questions and process ([RE-AIM](#), [Kirkpatrick-Barr](#), [Moore's framework](#))?
- ✓ How can I provide and utilize [feedback](#) to improve the CE session?

# Additional resources

## Further reading



- McLean SF. Case-Based Learning and its Application in Medical and Health-Care Fields: A Review of Worldwide Literature. *J Med Educ Curric Dev.* 2016;3. doi:[10.4137/JMECD.S20377](https://doi.org/10.4137/JMECD.S20377)
- Leung JS, Brar M, Eltorki M, Middleton K, Patel L, Doyle M, et al. Development of an in situ simulation-based continuing professional development curriculum in pediatric emergency medicine. *Advances in Simulation.* 2020;5(1):12. doi:[10.1186/s41077-020-00129-x](https://doi.org/10.1186/s41077-020-00129-x)