



## Reviewer checklist for virtual patient design

**Authors:** *Sören Huwendiek<sup>1</sup> and Bas de Leng<sup>2</sup> in cooperation with the eViP Project Team<sup>3</sup>.*

### About this reviewer checklist

This checklist has been developed to characterize the design of a virtual patient (VP) in detail by a reviewer. It comprises a comprehensive list of constituents that a VP can have, and focuses especially on those constituents that are supposed to foster clinical reasoning.

This checklist is intended to help an independent reviewer to explicitly capture the affordance of a VP. Combined with the student questionnaire, this checklist enables us to verify if a deliberate assembly of constituents in a VP fosters the intended activities of clinical reasoning. In addition it informs us how to improve VP design for clinical reasoning.

**1. Name of reviewer:**

**2. Date of review:**

1. Centre for Virtual Patients, University of Heidelberg Medical School, University of Heidelberg  
2. Department of Educational Development and Research, Faculty of Health, Medicine and Life Sciences, Maastricht University  
3. [www.virtualpatients.eu](http://www.virtualpatients.eu)

### I. Specifics of the case

<b>3. eViP ID</b>	<i>On the right side will be boxes with choices to click, where appropriate</i>
<b>4. VP system:</b>	CASUS
	CAMPUS Classic
	CAMPUS card
	Labyrinth
	WebSP
<b>5. Name of VP:</b>	
<b>6. Main learning objective (e.g., clinical reasoning, communication)</b>	
<b>7. Predominant question type:</b>	Multiple choice questions
	Long menu
	Free text
	Other:
<b>8. Feedback:</b>	Right/wrong
	Comparison with expert
	Additional comments why something is right
	Additional comments why something is wrong
<b>9. Prompts:</b>	Navigation instruction
	Basic sciences questions
	Clinical reasoning questions
	Other:
<b>10: Media use</b>	Text
	Images
	Ausio
	Video
<b>11. Pathway</b>	Linear unrestricted
	Linear restricted
	Branched
	Other
<b>12. Scenario used in:</b>	Self study
	Wrap-up
	In-session VP
	Other:

## II. Clinical reasoning

Answering format: Likert Scale (1-5: Do not agree at all – totally agree; not applicable) and a comment field to accompany each question.

### Authenticity of patient encounter and the consultation

Categories include patient characteristics, context, realism, and action:

13. This case is relevant for real medical practice.
14. This case gives a typical presentation of a patient with this disease.
15. The media (pictures, audio files, videos, etc) support the realism in this case.
16. The narrative of the patient in this case is stated in the patient's voice.
17. The prompts to the user and the questions are stated in the medical supervisor's (e.g., consultant's) voice.
18. The cognitive tasks students complete during the case work-up correspond to real-life physician tasks.
19. The numbers of decisions students make in this case correspond to real life decisions.
20. The chunks of information presented in this case reflect the quantity of information the user will be confronted with in real practice.
21. The case triggers the user to actively gather information necessary for diagnosis and therapy (e.g., history questions to ask, physical exams to perform, labs and diagnostic tests to order).
22. During the work-up of the case, the user is confronted with time constraints.

### Professional approach in the consultation

23. The case triggers the user (by e.g., prompts and feedback) to summarize the clinical problem in professional medical terms shortly.
24. The case triggers the user (by e.g., prompts and/or reference material) to interpret the data presented critically.
25. The case triggers the user (by e.g., prompts and feedback) to iteratively re-evaluate the suspected diagnoses in light of newly gained information.
26. The case triggers the user (by e.g., prompts and feedback) to infer consequences of the findings for diagnosis and therapy.

27. The case triggers the user (by e.g., prompts and feedback) to differentiate between important and less important information.

28. The case triggers the users (by e.g., prompts and feedback) to differentiate features as either “discriminating” or “confining” for differential diagnoses.

29. The case triggers the user (by e.g., prompts) to generate hypothesis early in the diagnostic process.

### Coaching during consultation

Categories include: prior knowledge and instruction:

30. The case triggers the user (by e.g., prompts, advance organizers) to link the case with their prior knowledge.

31. The degree of difficulty of the case is appropriate for the target group.

32. Media (pictures, video, audio, diagrams, graphics) are used, whenever superior to verbal explanations.

33. The case helps the user to interpret pathological data in an authentic format, by offering a normal finding as reference (e.g., pathologic and normal x-ray, sounds, etc).

34. The case triggers the user at the end of the case (by e.g., prompts) to point out the most important information.

35. The amount of information presented simultaneously (the so-called cognitive load) is appropriate.

36. The case uses attributes (e.g., highlighting via bold or colour, pointers) to point out the most important information.

37. The presentation of the case is adaptable to the learning style of the user.

38. The case gives users feedback on all decisions they take.

39. The feedback in the case is elaborated by explaining why something is right.

40. The feedback in the case is elaborated by explaining why something is wrong.

41. The feedback in the case is well timed.

42. Students are offered a summarized (e.g., statistical) feedback concerning their performance in different parts of the case work-up at the end of the case (e.g., concerning history taking, physical examination, diagnoses, lab & technical investigations, and therapeutic decisions).

43. The case offers possibilities for self-assessment.
44. The case offers remedial activities to practice clinical reasoning.
45. Scaffolding and help in the case can be faded.
46. The case triggers the user (by e.g., prompts, feedback) to evaluate their actions of their inquiry.
47. The case triggers the user (by. e.g., prompts, feedback) to evaluate their diagnostic reasoning.
48. The case triggers the user \*by e.g., prompts and feedback) to improve their strategies in clinical reasoning.
49. The case triggers the user to create some artifact (e.g., take personal notes) during the case work-up.

#### Overall judgment of the case

50. Overall, this case is very well suited to enhance learning in the target group.
51. Overall, this case is very well suited to foster clinical reasoning in the target group.

#### Open-ended questions

52. Special weaknesses of this case (inhibition of clinical reasoning):
53. Special strengths of this case (fostering clinical reasoning):