Train4Health

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Case study 4 toolkit

For educators

The case of Luuk de Vries

Increasing physical activity | Enhancing diet | Adhering to medication | Monitoring and managing symptoms

ESEL Nursing School of Lisbon · esu · inholland hogeschool · Politécnico de Santarém Escola Superior de Desporto de Rio Maior · RCSI · Ciências ULisboa · University of Maribor Faculty of Health Sciences

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Introduction

This case study is part of the Train4Health educational package, which aims to improve health care and other students' competencies in behaviour change support in self-managing chronic diseases. This document intends to assist educators in making the best use of this resource.

Case studies are an instructional method that engages students in the discussion of specific situations, typically real-world examples, providing context and allowing students to learn in a controlled environment. Case studies are a learner-centred method; they promote reflection about real-world practice and decision making whilst fostering the interaction between students. Group work is a well-established form of exploring the case. The educator's role is facilitating decision making and group work; students collaboratively address questions that have no single right answer (Thistlethwaite et al., 2012). Despite different approaches that may be followed by educators, we suggest using case studies for small group work, as students have reported preference for these groups, as opposed to larger groups or working on their own (Dupuis & Persky, 2008).

The development of Train4Health case studies is underpinned by the following principles:

- *Anonymity*: despite being realistic, each profile is not descriptive of any existing person and should not be attributed to anyone.
- *Diversity*: overall, the persons' profiles offer diversity, in terms of gender, age, ethnicity, sexual orientation and both social and functional status.
- *Authenticity*: each profile relates to real life and was assessed by persons living with chronic disease to ensure a faithful account of their perspectives.
- *Unjudgmental*: each case study is worded on a factual basis, without opinions or depreciative remarks on the person.
- *Multidisciplinary*: each case study draws on the expertise of different professions, such as nursing, pharmacy and sport sciences.
- *Evidence-based*: resources provided are grounded on the best possible evidence.
- *Behaviour-related*: each case study was developed for education on health- behaviour change and not other clinical aspects.
- *Continuous improvement*: there is an ongoing effort to improve each case study throughout the project lifecycle, based on internal peer-review and tests with stakeholders.

Presenting the toolkit

This case study toolkit consists of four components that work together, intending to provide the best teaching and learning experience:

- The person's profile.
- Learning outcomes and related resources.
- Assessment of students.
- Guidance for educators.

The person's profile

The person's profile presents the story of a person with one or more chronic diseases, unravelling opportunities for behaviour change support. The story is organised into different sections, depicted in the next page; these sections provide context and information to aid students in responding to the questions posed.

Each person's profile was primarily designed to support change in selected target behaviours; case study 4 addresses **physical activity, diet, medication taken and/or symptoms monitoring and management**.

Person	Luuk de Vries
Chronic diseases	Obesity Hypertension Heart Failure
Target behaviours	Physical activity Diet Medication adherence Monitoring and managing symptoms

Name: Luuk de Vries
Country: Netherlands
Age: 72 years old
Gender: Male
Life course: Retired person
Need: Chronic conditions/complex needs
Connectivity: broadband, smart phone

ICT skills
Internet usage - excellent
Mobile device skills – excellent
Affinity to new tech - good
Digital health literacy - good

Luuk is a 72-year-old retired baker who lives with his wife, Marije, in a nice residential area of Utrecht. They have one son, Kjeld de Vries, and one grandson. Luuk's grandson is 23 years old and has just started his PhD in Lisbon University. Luuk was always active, both at work where he needed to be standing or moving around, and in his social activities. He also commuted daily to work on his bike. Since he retired his son runs the bakery business, but Luuk likes to oversee the quality control of the products to continue to have the best pastries in the region. After Luuk got married he started developing overweight. He was diagnosed with obesity ten years ago. His cholesterol and blood pressure have both increased since then and he started pharmacological therapy. Lifestyle changes have also been recommended by his healthcare professionals. Five years ago Luuk had a myocardial infarction, which damaged a considerable portion of the cardiac muscle and left him with heart failure. Luuk used to ride his single speed "oma's fiets" (Dutch bike) every day. Since he developed heart failure he does not feel capable of doing that anymore. Luuk gets fatigued very quickly. He has to sit during short walks and after taking a bath.

What's important to Luuk

- Helping his son run the bakery business.
- Being able to help and care for his wife.
- Riding his bike and enjoying nice moments with friends and family outdoors.
- Visiting his grandson in Lisbon a couple of time per year.

Daily living

- Luuk has a strict routine. During the morning he helps his wife with household activities such as preparing meals.
- After lunch he goes to the bakery to help his son and supervise the work of his employers.
- At least 3 times a week, he meets with his friends to discuss football games. Luuk also enjoys a couple of beers. He is a staunch supporter of FC Utrecht.

Events, issues & personal concerns

- One year ago, Luuk's wife had a stroke which affects her mobility. Luuk helps her with daily living activities such as cooking and cleaning the house. He has to stop many times during the tasks due to fatigue.
- Despite warnings from his healthcare professionals, Luuk tends to overeat. He also takes the remaining goodies home from the bakery at the end of the day because he doesn´t like to spoil food and throw it away.
- Luuk believes that his antihypertensive medicines are not working. He tends to not take them. Luuk's general practitioner (GP) recommends self-monitoring of his blood pressure. Luuk struggles to use the equipment.
- Luuk is very proud of his grandson. He misses him and, together with all his health concerns, this is having a heavy negative effect on his mood and energy.
- Luuk suffered 3 falls last month, which caused fear of getting an injury during his short walks.

Own resources & assets/support

- Luuk and his wife have a good income and no difficulties in accessing healthcare aid.
- Considering the difficulties that Luuk and his wife are having due to health problems, they are considering hiring a home-based care service.

Health concerns

- Heart failure, hypertension and obesity.
- Luuk feels fatigued very often and this is having a detrimental effect on his physical activity and overall lifestyle.
- His blood pressure is uncontrolled.
- Luuk has a high intake of saturated fat, salt and sugars due to goodies from the bakery. He says "it's the only thing that gives me pleasure".

Health tests

Luuk attends a multidisciplinary care team on a regular basis for monitoring his health conditions, covered by his pension fund and the National Health System:

- Laboratory blood tests;
- Thorax X-Ray;
- Electrocardiogram (ECG);
- Echocardiogram.

Treatment: medications, therapies, etc.

- Multiple medicines addressing his chronic conditions. Luuk takes medicines at different times of the day.

Care professional concerns

- He sometimes misses appointments with the healthcare team due to his responsibilities.
- Luuk's adherence to his treatment is not optimal due to his beliefs about medicines.
- Luuk has difficulty in managing his weight.

Unmet needs | Luuk is uncomfortable with his lifestyle. Luuk may need support in planning for the future such as hiring a home-based care service to help him and his wife manage their chronic conditions. A food provision service for Luuk and household help services would be helpful due to the progression of Luuk's chronic condition. Luuk also feels the need to learn more about, and how to cope better with, his condition due to increasing fatigue. He also makes mistakes with medicines; such as duplicating doses and changing the times he takes his medicines.

BLUEPRINT

This persona was developed by Nuno Pimenta, Isa Félix and Mara Guerreiro as part of the Train4Health Project, based on the Blueprint personas, and was revised by Dalia Bajis (International Pharmaceutical Federation)
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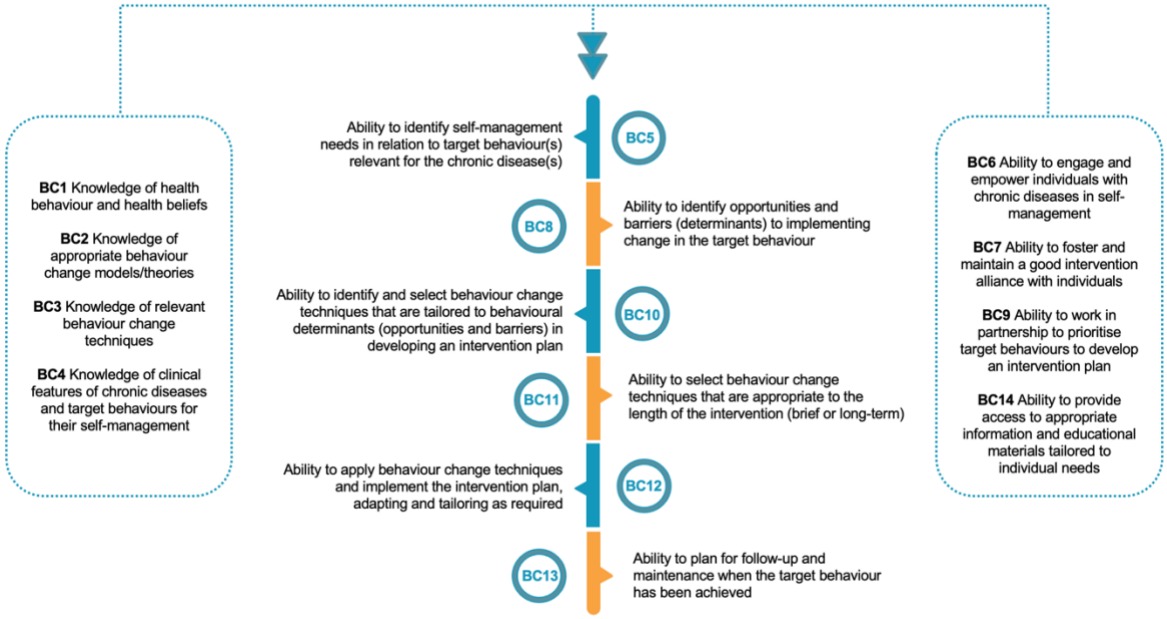
Learning outcomes and related resources

Learning outcomes aligned with the Train4Health competency framework on behaviour change support in chronic diseases have been derived. The numbering of each learning outcome is linked to competency statements BC5 to BC14 (Guerreiro et al., 2021), depicted in the figure below. The central vertical line in this figure is aligned with how health and other professions are trained to deliver interventions (assessment >> plan >> intervention >> follow-up).



As detailed in the next pages, each learning outcome is, in turn, linked with content topics, open-ended questions and suggested accompanying reading from an open access book produced by the Train4Health consortium[1]. Educators may choose questions that move students logically from assessment (learning outcomes related to BC5 and BC8), planning (learning outcomes related to BC10 and BC11) and intervention (learning outcomes related to BC12) to follow-up (learning outcomes related to BC13).

[1] To access the e-book please refer to the Train4Health website, Resources Tab, under Publications, presentations and recordings.

Competency statement (Ability to:)	Associated learning outcome	Bloom's taxonomy Level	Required knowledge	Suggested reflection question	Book content contributing to achieving the learning outcome
BC5. Identify self-management needs in relation to target behaviour(s) relevant for the chronic disease(s)	BC5.1 Assess the person's behaviour in self-management using appropriate measures	Cognitive 5: synthesis	• Instruments to assess target behaviours in the self-management of chronic disease and interpretation of results: examples.	• How would you assess physical activity? • How would you assess diet and eating habits? • How would you assess medication adherence? • How would you assess Luuk's behaviour related to symptoms monitoring and managing?	Chapter 3 • 3.1.2 Assessing target behaviours in the self-management of high priority chronic diseases
	BC5.2 Compare actual versus desirable health behaviours to identify self-management needs, based on assessment data	Cognitive 6: evaluation	• Actual behaviour, based on assessment data, versus desirable behaviour: examples.	• Which behaviour(s) are potential target(s) for the BC intervention? • What do you think would be the desirable goals for the selected behaviour(s)?	Chapter 3 • 3.1 Target behaviours in high priority chronic diseases • 3.1.2 Assessing target behaviours in the self-management of high priority chronic diseases
BC6. Engage and empower individuals with chronic diseases in self-management	BC6.1 Generate with the person opportunities for behavioural change	Cognitive 5: synthesis	• Communication skills: questioning skills and empathic listening. • Structuring a behaviour change interaction: setting the stage (ABCD approach).	• What communication strategies would you choose for opening and closing a BC intervention with Luuk? • Considering Luuk's profile, what strategies for time management would you suggest? • If Luuk will engage in a long behaviour change intervention for adapting and increasing his physical activity, list key points for structuring each session, from a communication standpoint. • If Luuk will engage in a long behaviour change intervention	Chapter 5 • 5.2.1 Basic communication skills • 5.2.2 Optimising verbal language • 5.2.5 Structuring the interaction: the ABCD approach (e.g., setting the stage)

Competency statement (Ability to:)	Associated learning outcome	Bloom's taxonomy Level	Required knowledge	Suggested reflection question	Book content contributing to achieving the learning outcome
				for enhancing his diet, list key points for structuring each session, from a communication standpoint. • If Luuk will engage in a long behaviour change intervention for enhancing his medication adherence, list key points for structuring each session, from a communication standpoint. • If Luuk will engage in a long behaviour change intervention for enhancing monitoring and management of his symptoms, list key points for structuring each session, from a communication standpoint. • Identify two person-centered communication strategies to implement in Luuk's behaviour change intervention.	
	BC6.2 Assess the extent to which the person wishes and is able to become co-manager of his/her chronic disease	Cognitive 6: evaluation	• Overview of key concepts: patient empowerment and shared decision-making in behaviour change interventions. • Communication skills: questioning skills and empathic listening. • Structuring a behaviour change interaction: setting the stage, obtain a commitment (ABCD approach).	• Which details of Luuk's profile may indicate he wishes and/or is able to become actively involved in increasing his physical activity? • Which details of Luuk's profile may indicate he wishes and/or is able to enhance his diet? • Which details of Luuk's profile may indicate he wishes and/or is able to become actively medication compliant? • Which details of Luuk's profile may indicate he wishes and/or	Chapter 5 • 5.1.1 Patient empowerment • 5.1.2 Person-centredness • 5.1.3 Shared decision making • 5.2.1 Basic communication skills • 5.2.2 Optimising verbal language • 5.2.5 Structuring the interaction: the ABCD approach (e.g., establish an information base,

Competency statement (Ability to:)	Associated learning outcome	Bloom's taxonomy Level	Required knowledge	Suggested reflection question	Book content contributing to achieving the learning outcome
				is able to monitor and manage his symptoms? • Explain the role of active listening in assessing the extent to which a person is able/willing to actively participate in the self-management of chronic diseases. • Please detail an example of strategies for creating an open and positive environment for communication.	obtain a commitment, negotiate an intervention plan)
	BC6.3 Demonstrate how to promote coping skills to manage the physical, emotional, and social impacts of chronic disease in everyday life	Cognitive 3: application	• Concept of coping skills. • Applying strategies to promote coping skills in persons self-managing chronic disease.	• Please provide an example of strategies to promote coping skills relevant for the case.	Chapter 5 • 5.2.4 Coping skills to manage chronic disease
	BC6.4 Assist the person to become co-manager of his/her chronic disease in partnership with health professionals	Affective 2: responding	• Overview of key concepts: patient empowerment and shared decision-making in behaviour change interventions. • Communication skills: questioning skills and empathic listening. • Structuring a behaviour change interaction: setting the stage, establish an information base, obtain a commitment, negotiate an intervention plan (ABCD approach).	• How would you implement shared decision-making strategies for Luuk's behaviour change? • Present which strategies would you implement to assist the persons' readiness for behaviour change.	Chapter 5 • 5.1.1 Patient empowerment • 5.1.2 Person-centredness • 5.1.3 Shared decision making • 5.2.1 Basic communication skills • 5.2.2 Optimising verbal language • 5.2.5 Structuring the interaction: the ABCD approach (e.g., establish an information base, obtain a commitment, negotiate an intervention plan)

Competency statement (Ability to:)	Associated learning outcome	Bloom's taxonomy Level	Required knowledge	Suggested reflection question	Book content contributing to achieving the learning outcome
BC7. Foster and maintain a good intervention alliance with individuals	BC7.1 Apply strategies to support the co-operative working relationship between the person and the professional	Affective 2: responding	• Overview of key concepts: person-centredness. • Communication skills: questioning skills and empathic listening. • Optimising the use of verbal language. • Structuring a behaviour change interaction: setting the stage, establish an information base, obtain a commitment, negotiate an intervention plan (ABCD approach).	• List two positive communication and support strategies to help building a good and co-operative working relationship with Luuk. • Identify one relational obstacle in general and suggest strategies to overcome it. • Identify two common traps you want to avoid in BC interventions. • What strategy would you implement to overcome "teaching", a common behaviour change intervention trap?	Chapter 5 • 5.1.1 Patient empowerment • 5.1.2 Person-centredness • 5.1.3 Shared decision making • 5.2.1 Basic communication skills • 5.2.2 Optimising verbal language • 5.2.5 Structuring the interaction: the ABCD approach
BC8. Identify opportunities and barriers (determinants) to implementing change in the target behaviour	BC8.1 Demonstrate the importance of collecting holistic information about the person to tailor the behaviour intervention	Affective 4: organisation	• Behaviour determinants • Assessing behaviour determinants • Tailoring behaviour change intervention to each person: examples.	• Demonstrate how collecting holistic information about Luuk can inform/support decision making regarding tailoring BC intervention.	Chapter 4 • 4.1.1 Behaviours determinants • 4.1.2 Assessing behaviour determinants using appropriate measures Chapter 5 • 5.2.5 Structuring the interaction: the ABCD approach (e.g., establish an information base, obtain a commitment, negotiate an intervention plan)
	BC8.2 Demonstrate how to assess behaviour determinants through structured questionnaires,	Affective 3: valuing	• Behaviour determinants • Measures to assess determinants in the self- management of	• List Luuk's daily living details, support and concerns relevant for BC.	Chapter 4 • 4.1.1 Behaviours determinants

Competency statement (Ability to:)	Associated learning outcome	Bloom's taxonomy Level	Required knowledge	Suggested reflection question	Book content contributing to achieving the learning outcome
	interview and other approaches		chronic diseases and interpretation of results (e.g., Bartel index for activities of daily living, Beliefs about medicines questionnaire). • Communication skills: questioning skills and empathic listening. • Structuring a behaviour change interaction: establish an information base (ABCD approach).		• 4.1.2 Assessing behaviour determinants using appropriate measures Chapter 5 • 5.2.1 Basic communication skills • 5.2.2 Optimising verbal language • 5.2.5 Structuring the interaction: the ABCD approach (e.g., establish an information base)
	BC8.3 Discuss opportunities and barriers that influence target behaviours in a person-centred fashion	Cognitive 5: synthesis	• Communication skills: questioning skills and empathic listening. • Optimising the use of verbal language. • Structuring a behaviour change interaction: establish an information base (ABCD approach).	• Identify opportunities and barriers that influence Luuk's sedentary behaviour, step count and overall physical activity. • Identify opportunities and barriers that influence Luuk's healthy eating. • Identify opportunities and barriers that influence Luuk's medication adherence. • Identify opportunities and barriers that influence Luuk's symptom monitor and management.	Chapter 5 • 5.2.1 Basic communication skills • 5.2.2 Optimising verbal language • 5.2.5 Structuring the interaction: the ABCD approach (e.g., establish an information base)
BC9. Work in partnership to prioritise target behaviours to develop an intervention plan	BC9.1 Recognise the person's views, knowledge and skills, developed through his/her experience with chronic disease, to aid prioritisation of target behaviours	Affective 5: characterization	• Communication skills: questioning skills and empathic listening. • Optimising the use of verbal language. • Structuring a behaviour change interaction: establish an	• Explain how the person's views and experiential knowledge can be important for an intervention periodization. • Demonstrate how the behaviour change intervention can benefit by prioritizing target behaviours	Chapter 5 • 5.2.1 Basic communication skills • 5.2.2 Optimising verbal language • 5.2.5 Structuring the interaction: the ABCD

Competency statement (Ability to:)	Associated learning outcome	Bloom's taxonomy Level	Required knowledge	Suggested reflection question	Book content contributing to achieving the learning outcome
			information base (ABCD approach).	based on the person's views and experiential knowledge.	approach (e.g., establish an information base)
BC10. Identify and select behaviour change techniques that are tailored to behavioural determinants (opportunities and barriers) in developing an intervention plan	BC10.1 Discuss BCTs addressing behaviour determinants (opportunities and barriers) with the person	Affective 3: valuing	• Behaviour determinants • Assessing behaviour determinants • Behaviour change techniques • Communication skills: questioning skills and empathic listening. • Optimising the use of verbal language. • Structuring a behaviour change interaction: negotiate an intervention plan (ABCD approach).	• Select one BCT addressing behavioural determinants (opportunities and barriers) for each target behaviour, in Luuk's case.	Chapter 4 • 4.1 Opportunities and barriers to implementing change in target behaviours • 4.1.1 Behaviours determinants • 4.1.2 Assessing behaviour determinants using appropriate measures • 4.2.1 Behaviour change techniques to support chronic disease self-management • 4.2.2 Tailoring behaviour change techniques Chapter 5 • 5.2.1 Basic communication skills • 5.2.2 Optimising verbal language • 5.2.5 Structuring the interaction: the ABCD approach (e.g., negotiate an intervention plan)
	BC10.2 Among BCTs addressing behavioural determinants, decide on which can included in the intervention plan, according	Cognitive 6: evaluation	• Behaviour change techniques • Communication skills: questioning skills and empathic listening. • Optimising the use of verbal language.	• Justify why the previously selected BCTs best suit Luuk's views and resources.	Chapter 4 • 4.2 Tailoring behaviour change techniques in the development of an intervention plan Chapter 5

Competency statement (Ability to:)	Associated learning outcome	Bloom's taxonomy Level	Required knowledge	Suggested reflection question	Book content contributing to achieving the learning outcome
	to the person's views and resources		• Structuring a behaviour change interaction: negotiate an intervention plan (ABCD approach)		• 5.2.1 Basic communication skills • 5.2.2 Optimising verbal language • 5.2.5 Structuring the interaction: the ABCD
BC11. Select behaviour change techniques that are appropriate to the length of the intervention (brief or long-term)	BC11.1 Demonstrate critical understanding of BCTs appropriate for brief or long-term behaviour interventions	Cognitive 3: application	• Distinction between brief and long-term behaviour change interventions. • Examples of the application of BCTs according to the length of the intervention.	• Explain whether the previously selected BCT is appropriate for a brief behaviour change intervention.	Chapter 4 • 4.2.3 Selecting behaviour change techniques according to the length of the intervention
BC12. Apply behaviour change techniques and implement the intervention plan, adapting and tailoring as require	BC12.1 Apply behaviour change techniques according to the intervention plan	Cognitive 3: application	• Behaviour change techniques • Applying core BCTs as part of an intervention plan: examples.	• Describe the practical application of the selected BCTs, in either a brief or long-term BC intervention.	Chapter 4 • 4.2 Tailoring behaviour change techniques in the development of an intervention plan • 4.2.2 Tailoring behaviour change techniques • 4.2.3 Selecting behaviour change techniques according to the length of the intervention Chapter 5 • 5.2.5 Structuring the interaction: the ABCD approach (e.g., negotiate an intervention plan)
	BC12.2 Assess the person's target behaviour regularly using appropriate data collection approaches	Cognitive 6: evaluation	• Assessing the person's target behaviour as part of monitoring the intervention plan: examples	• Describe how would you assess Luuk's target behaviour(s) over time.	Chapter 3 • 3.1.2 Assessing target behaviours in the self-management of high priority chronic diseases

Competency statement (Ability to:)	Associated learning outcome	Bloom's taxonomy Level	Required knowledge	Suggested reflection question	Book content contributing to achieving the learning outcome
	BC12.3 Demonstrate how to monitor the implementation of BCTs as part of the intervention plan	Affective 2: responding	• Assessing the person's target behaviour as part of monitoring the intervention plan: examples. • Monitoring BCTs implementation as part of the intervention plan: examples.	• Describe how would you assess the effectiveness of the selected BCTs, as part of the BC intervention.	Chapter 3 • 3.1.2 Assessing target behaviours in the self-management of high priority chronic diseases Chapter 5 • 5.2.5 Structuring the interaction: the ABCD approach (e.g., negotiate an intervention plan, follow-up encounters)
	BC12.4 Demonstrate how to redefine the intervention plan as appropriate	Affective 2: responding	• Behaviour change techniques • Applying core BCTs as part of an intervention plan: examples. • Changing the plan based on the experience gained when the intervention is not working: examples.	• Describe how would you adjust the BC intervention to address each long-term intervention event described in the case study.	Chapter 4 • 4.2 Tailoring behaviour change techniques in the development of an intervention plan • 4.2.2 Tailoring behaviour change techniques • 4.2.3 Selecting behaviour change techniques according
BC13. Plan for follow-up and maintenance when the target behaviour has been achieved	BC13.1 Plan the end of the intervention and the use of BCTs and resources beyond its end to promote maintenance of the target behaviour	Cognitive 5: synthesis	• Strategies for signalling termination at a near point in time and for dealing with concerns. • Examples of potentially useful resources.	• Select two BCTs to take effect on Luuk's behaviour maintenance plan, beyond the timeframe of the BC intervention. • Explain why and how the selected BCTs are suitable and sustainable for Luuk's maintenance plan.	Chapter 4 • 4.2.1 Behaviour change techniques to support chronic disease self-management Chapter 5 • 5.2.5 Structuring the interaction: the ABCD approach (e.g., negotiate an intervention plan, follow-up encounters)

Competency statement (Ability to:)	Associated learning outcome	Bloom's taxonomy Level	Required knowledge	Suggested reflection question	Book content contributing to achieving the learning outcome
BC14. Provide access to appropriate information and educational materials tailored to individual needs	BC14.1 Share information and adequate educational materials according to individual factors (e.g., knowledge gaps, health literacy level and preferences)	Affective 5: characterisation	• Concept of health literacy • Examples of available educational resources (e.g., websites). • Tailoring information to individual factors: examples.	• Select available information and adequate educational resources (e.g., websites) that better match Luuk's profile and target behaviour(s).	Chapter 5 • 5.1.4 Health literacy and communication

Assessment criteria

This section includes assessment criteria aligned with the aforementioned learning outcomes. Each criterion is scored on three levels: (0) insufficient level of achievement, (1) moderate level of achievement and (2) good level of achievement. Examples of observable evidence are provided for each level, to ensure consistency in assessment and increase the transparency of grading. Criteria can be improved in light of experience gained by educators in different disciplines and countries.

Two identical sets of criteria are provided, to be used by educators to assess group work in-class and by students for self-assessment.

Assessment criteria for in-class group work by educators

Learning outcome	Insufficient level of achievement 0	Moderate level of achievement 1	Good level of achievement 2
BC5.1 Assess the person's behaviour in self-management using appropriate measures	The group does not *know how* to assess self-management behaviours using appropriate measures.	The group *knows how* to assess self-management behaviours, by listing measurement approaches appropriate for specific target behaviours (e.g., medication adherence questionnaires, physical activity questionnaires, dietary questionnaires, wearables data).	The group *knows how* to assess self-management behaviours, by explaining how to apply and interpret measurement approaches that are appropriate for specific target behaviours (e.g., explaining how open questions are used in an interview; explaining how to use a pedometer to gain insights on physical activity; explaining how to use the medication adherence report scale - MARS).
BC5.2 Compare actual versus desirable health behaviours to identify self-management needs, based on assessment data	The group does not *know how* to compare actual versus desired health behaviours to identify self-management needs, based on assessment data.	The group *knows how* to compare actual versus desired health behaviours to identify self-management needs, by interpreting assessment data and identifying a gap in relation to the desired behaviour (e.g., interpreting pedometer readings and identifying a gap in relation to step count recommendations; interpreting the results of dietary questionnaires in relation to eating recommendations for a chronic disease).	The group *knows how* to compare actual versus desired health behaviours to identify self-management needs, by interpreting assessment data and having the knowledge about the desirable health behaviour (e.g., interpreting pedometer readings and stating what are the recommendations for step count; interpreting the results of dietary questionnaires and stating what are the diet recommendations for a chronic disease).
BC6.1 Generate with the person opportunities for behavioural change	The group does not *know how* to create with the person opportunities to change behaviour (e.g.,1 no knowledge on appropriate questioning, listening and reflective responding); (e.g., 2 wrong conceptions, such as suggesting closed questions to start a talk, suggesting leading or directive questions, being unable to list active listening strategies).	The group *knows how* to use communication to generate with the person opportunities to change behaviour but lacks knowledge on techniques to initiate health behaviour change talk (e.g., knowledge on appropriate questioning, listening and reflective responding but unable to list preferred techniques to initiate health behaviour change talk).	The group *knows how* to use communication to generate with the person opportunities to change behaviour and has knowledge on techniques to initiate health behaviour change talk (e.g., knowledge on appropriate questioning, listening and reflective responding, able to list a minimum of one of the preferred techniques to initiate health behaviour change talk: person-initiated discussion; direct questioning, non-personalised initiation).

Learning outcome	Insufficient level of achievement 0	Moderate level of achievement 1	Good level of achievement 2
BC6.2 Assess the extent to which the person wishes and is able to become co-manager of their chronic disease	The group does not *know how* to assess the extent to which the person wishes and is able to become a co-manager of his/her chronic disease (e.g.1 unable to list indicators related to capacities, feelings, beliefs or resources, including self-efficacy, health literacy); (e.g., 2 unable to list indicators related to things the person does, such as participating in shared decision-making, active information seeking about the condition, active self-management of the condition, participating in a patient support or advocacy groups).	The group *knows* one or two of indicators related to the person's wishes and ability to become co-manager of a chronic disease (e.g., 1 indicators related to ability, perceived control and feelings, beliefs or resources, including self-efficacy, health literacy); (e.g., 2 indicators related to things the person does, such as participating in shared decision-making, actively seeking information about the disease, actively self-managing the disease, participating in support or advocacy groups).	The group *knows how* to recognize a range of indicators (>2) related to the person's wishes and ability to become co-manager of a chronic disease (e.g., 1 recognises capabilities, beliefs or resources, e.g., self-efficacy, health literacy); (e.g., 2 indicators related to things the person does, such as participating in shared decision-making, actively seeking of information about the condition, actively self-managing the condition, participating in support or advocacy groups).
BC6.3 Demonstrate how to promote coping skills to manage the physical, emotional, and social impacts of chronic disease in everyday life	The group does not *know how* to promote coping skills to manage the physical, emotional, and social impacts of chronic disease in everyday life.	The group *knows how* to promote coping skills, by merely giving example(s) of coping strategies (e.g., creating a to-do-list, mindfulness).	The group *knows how* to promote coping skills, by giving examples of problem-focused and emotion-focused strategies relevant for the case (e.g., creating a to-do-list, changing behaviour).
BC6.4 Assist the person to become co-manager of his/her chronic disease in partnership with professionals	The group does not *know how* to help the person to become a co-manager of his/her chronic disease in collaboration with health professionals (e.g., 1 share decision-making); (e.g., 2 empower the person with resources for self-management, such as information and directions for support groups).	The group *knows how* to help the person to become a co-manager of his/her chronic disease in collaboration with professionals, by giving examples of at least one approach in practice (e.g., 1 shared-decision making); (e.g., 2 empowering the person with resources for self-management), without being able to give examples of related communication skills (e.g., paraphrasing, parroting, open-ended questions).	The group *knows how* to help the person to become a co-manager of his/her chronic disease in collaboration with professionals, by giving examples of at least one approach in practice (e.g., 1 shared-decision making); (e.g., 2 empowering the person with resources for self-management), and related communication skills (e.g., paraphrasing, parroting, open-ended questions).
BC7.1 Apply strategies to support the co-operative working relationship between the person and the professional	The group does not *know how* to use strategies to support a collaborative working relationship between the person and the professional (e.g., adapting the structure of the session to the person's needs avoiding negative interpersonal behaviours, such as impatience; overcoming relational barriers such as talking too much or too little; using the person's summaries to gauge understanding rather than 'teach and tell', solution orientation in the face of challenges, avoiding potential pitfalls such as judging, controlling).	The group *knows how* to use two strategies to support the co-operative working relationship between the person and the professional (e.g., adapting the structure of the session to the person's needs, avoiding negative interpersonal behaviours such as impatience; overcoming relational barriers such as talking too much or too little; using the person's summaries to gauge understanding rather than "teach and tell", solution orientation in the face of challenges, avoiding potential pitfalls such as judging, controlling).	The group *knows how* to use >2 strategies to support a collaborative working relationship between the person and the professional (e.g., adapting the structure of the session to the person's needs, avoiding negative interpersonal behaviours such as impatience; overcoming relational barriers such as talking too much or too little; using the person's summaries to gauge understanding rather than "teach and tell", solution orientation in the face of challenges, avoiding potential pitfalls such as judging, controlling).

Learning outcome	Insufficient level of achievement 0	Moderate level of achievement 1	Good level of achievement 2
BC8.1 Demonstrate the importance of collecting holistic information about the person to tailor the behaviour intervention	The group does not *know how* to tailor a behaviour change intervention based on information about the person (e.g.1 information about behaviour determinants, such as knowledge about the disease and consequences of adopting/not adopting a health promoting behaviour, memory issues, beliefs about medication necessity, concerns about medication, impulses, stress/anxiety, social support); (e.g.2 information about the target behaviour, such as current step count or fruit intake) (e.g., 3 preferences and resources, such as affinity to new technology, possession of a mobile device, broadband connectivity).	The group *knows how* to tailor a behaviour change intervention based on limited information about the person, i.e. only one of the three examples below (e.g., 1 information about behaviour determinants, such as knowledge about the disease and consequences of adopting/not adopting a health promoting behaviour, memory issues, beliefs about medication necessity, concerns about medication, impulses, stress/anxiety, social support); (e.g., 2 information about the target behaviour, such as current step count or fruit intake); (e.g., 3 preferences and resources, such as affinity to new technology, possession of a mobile device, broadband connectivity).	The group *knows how* to tailor a behaviour change intervention based on comprehensive information about the person, i.e., at least two of the examples below (e.g., 1 information about behaviour determinants, such as knowledge about the disease and consequences of adopting/not adopting a health promoting behaviour, memory issues, beliefs about medication necessity, concerns about medication impulses, stress/anxiety, social support); (e.g., 2 information about the target behaviour, such as current step count or fruit intake); (e.g., 3 preferences and resources, such as affinity to new technology, possession of a mobile device, broadband connectivity).
BC8.2 Demonstrate how to assess behaviour determinants through structured questionnaires, interview and other approaches	The group does not *know how* to assess behaviour determinants through structured questionnaires (e.g., Beliefs about medicines questionnaire, Basic Psychology Needs questionnaire, Fagerstrom test for nicotine dependence, regulation of eating behaviour scale), interview and other approaches.	The group *knows how* to assess behaviour determinants, by listing measurement approaches appropriate for specific determinants (e.g., Beliefs about medicines questionnaire, Basic Psychology Needs questionnaire, Fagerstrom test for nicotine dependence, regulation of eating behaviour scale), interview and other approaches.	The group *knows how* to assess behaviour determinants, by explaining how to apply and interpret measurement approaches that are appropriate for specific determinants (e.g., explaining how open questions are used in an interview; explaining how to use the Beliefs about Medicines questionnaire).
BC8.3 Discuss opportunities and barriers that influence target behaviours in a person-centred fashion	The group is unable to *identify* and *discuss* behaviour determinants for a specific case (e.g., 1 individual determinants, such as knowledge about the disease and consequences of adopting/not adopting a health promoting behaviour, memory, beliefs about medication necessity, concerns about medication impulses, stress/anxiety); (e.g., 2 social support, health policy).	The group is able to *identify* behaviour determinants but does not *know how* to explain their influence in target behaviours in a specific case (e.g., the absence of a safe place to walk near home or activity friendly communities may or may not be a barrier for physical activity, depending on the case).	The group is able to *identify* behaviour determinants and *knows how* to discuss their influence in target behaviours for a specific case (e.g., explaining how the absence of a safe place to walk near home is not a barrier to physical activity as the person enjoys driving to the seaside).
BC9.1 Recognise the person's views, knowledge and skills, developed through his/her experience with chronic disease, to aid prioritisation of target behaviours	The group does not *know how* to *recognise* the opinions and experiential knowledge and skills of the person to prioritise high- or low-level target behaviours (e.g., in a person with obesity prepared to walk more but not contemplating other modalities of physical activity, recommending resistance training instead of aerobic exercise, such as brisk walking).	The group *knows how* to integrate the person's views, knowledge and skills in a limited fashion to prioritise high- or low-level target behaviours (e.g., recognising that brisk walking is ideal in a person living with obesity who is prepared to walk more but recommending consultations with a nutritionist when the persons believes she has the knowledge and skills to manage her/his diet).	The group *knows how* to integrate the person's views, knowledge and skills to prioritise high- or low-level target behaviours (e.g., recognising that brisk walking is ideal in a person living with obesity who is prepared to walk more and accepting that a recommending a nutritionist is suboptimal when the person believes she has the knowledge and skills to manage her/his diet).

Learning outcome	Insufficient level of achievement 0	Moderate level of achievement 1	Good level of achievement 2
BC10.1 Discuss behaviour change techniques (BCTs) addressing behaviour determinants (opportunities and barriers) with the person	The group is unable to *select* any BCT for a specific case.	The group is able to *select* one or more BCTs but does not *know* to *discuss* their alignment with behaviour determinants in a specific case (e.g., selecting "Information about health consequences" but being unable to explain that is adequate for a person in whom lack of knowledge is a barrier to changing behaviour).	The group is able to *select* one or more BCTs and *knows* how to *discuss* their alignment with behaviour determinants in a specific case (e.g., selecting "Information about health consequences" and explain that is adequate for a person in whom lack of knowledge is a barrier to changing behaviour).
BC10.2 Among BCTs addressing behavioural determinants, decide on which can included in the intervention plan, according to the person's views and resources	The group is unable to *provide* an example of *tailoring* BCTs that address behaviour determinants based on person's views and resources.	The group is able to *provide* one example of *tailoring* BCTs that address behavioural determinants based on a person's views and resources (e.g., action planning to address fatigue as a barrier to physical activity).	The group is able to *provide* two or more examples of *tailoring* BCTs that address behavioural determinants based on the person's views and resources (e.g., 1 action planning to address fatigue as a barrier to physical activity); (e.g., 2 information about health consequence to address lack of knowledge about the importance of physical activity).
BC11.1 Demonstrate critical understanding of BCTs appropriate for brief or long-term behaviour interventions	The group is *unable* to appropriately *select* BCTs according to intervention length in a specific case.	The group is able to *provide* one example of a BCT *adequate* to intervention length in a specific case (e.g., feedback on outcomes of behaviour for a brief intervention where multiple contacts are envisaged).	The group is able to *provide* two or more examples of BCTs *adequate* to intervention length in a specific case (e.g., 1 feedback on outcomes of the behaviour for a brief intervention when multiple contacts are included); (e.g., 2 review behavioural goals for a long intervention).
BC12.1 Apply behaviour change techniques according to the intervention plan	The group is *unable* to explain how to *apply* BCTs according to the intervention plan.	The group is able to *provide* an example of *applying* a BCT according to the intervention plan (e.g., when using feedback on behaviour, explaining how it can be operationalised across sessions).	The group is able to *provide* two examples of *applying* BCTs according to the intervention plan (e.g., 1 when using feedback on behaviour, explaining how it can be operationalised across sessions); (e.g., 2 when using review behaviour goals, explaining how it can be operationalised across sessions).
BC12.2 Assess the person's target behaviour regularly using appropriate data collection approaches	The group does not *know how* to assess person's target behaviour using appropriate data collection approaches (e.g., medication compliance questionnaires, physical activity questionnaires, nutrition questionnaires, wearable device data, and interview).	The group *knows how* to assess person's target behaviour regularly, by listing appropriate measurement approaches (e.g., using medication adherence questionnaires, physical activity questionnaires, dietary questionnaires, and wearables data across sessions).	The group *knows how* to assess person's target behaviour regularly by explaining how to apply and interpret measurement approaches that are appropriate for specific target behaviours (e.g., explaining how open questions are used in an interview, explaining how to use a pedometer to gain insights on physical activity; explaining how to use the medication adherence report scale - MARS across sessions).

Learning outcome	Insufficient level of achievement 0	Moderate level of achievement 1	Good level of achievement 2
BC12.3 Demonstrate how to monitor the implementation of BCTs as part of the intervention plan	The group does not *know how* to monitor the implementation of BCT as part of the intervention plan (i.e., assessing whether the person is using the BCT or BCT bundle and whether it is working).	The group *knows how* to ascertain if the person is using the BCT or BCT bundle but is unable to *explain* ways to assess if BCTs are working (e.g., explains how they would inquiry if self-monitoring using a digital activity tracker was implemented but does not collect data to ascertain its potential effect).	The group *knows how* to ascertain if the person is using the BCT or BCT bundle and is able to *explain* ways to assess if BCTs are working (e.g., interpreting step count in a person that implements self-monitoring of behaviour via a pedometer).
BC12.4 Demonstrate how to redefine the intervention plan as appropriate	The group does not *know how* to redefine the intervention plan in light of changes in behaviour determinants and/or results.	The group *knows how* to redefine the intervention plan but does not *take into account* all relevant information about the person (e.g., integrating only information about unsuccessful results without considering changes in behaviour determinants).	The group *knows how* to redefine the intervention plan considering all relevant information about the person (e.g., integrating information about unsuccessful results whilst considering changes in behaviour determinants).
BC13.1 Plan the end of the intervention and the use of BCTs and resources beyond its end to promote maintenance of the target behaviour	The group does not *know how* to plan the end of the intervention (e.g., plan for the use of BCT and resources after the end of the intervention in order to maintain the target behaviour).	The group *knows how* to plan the end of the intervention but is not able to suggest self-enactable BCTs to promote maintenance of the target behaviour, i.e. BCTs that the person can use on her own, such as action planning, self-monitoring of behaviour, problem solving, partially aware of the resources that promote the maintenance and maintenance of target behaviour after interventions, but the group does not *know how* to recommend them.	The group *knows how* to plan the end of the intervention and is able to suggest self-enactable BCTs to promote maintenance of the target behaviour, i.e., BCTs that the person can use on her own, such as action planning, self-monitoring of behaviour, problem solving.
BC14.1 Share information and adequate educational materials according to individual factors (e.g., knowledge gaps, health literacy level and preferences)	The group does not *know how* to select information and appropriate educational materials; according to individual factors (e.g., 1 suggesting a MOOC for a person with good internet usage and affinity to new tech); (e.g., 2 using paper-based infographics in a person without access to a computer or a mobile device); (e.g., 3 suggesting a website directed at a knowledge gap to a person with good digital health literacy).	The group is able to *list* available educational resources and materials but does not *know how* to tailor them to individual factors (e.g., 1 suggesting a MOOC for a person with good internet usage and affinity to new tech); (e.g., 2 using paper-based infographics in a person without access to a computer or a mobile device); (e.g., 3 suggesting a website directed at a knowledge gap to a person with good digital health literacy).	The group is able to *tailor* available educational resources and materials to individual factors (e.g., 1 suggesting a MOOC for a person with good internet usage and affinity to new tech); (e.g., 2 using paper-based infographics in a person without access to a computer or a mobile device); (e.g., 3 suggesting a website directed at a knowledge gap to a person with good digital health literacy).

Self-assessment criteria for students

Learning outcome	Insufficient level of achievement 0	Moderate level of achievement 1	Good level of achievement 2
BC5.1 Assess the person's behaviour in self-management using appropriate measures	I do not *know how* to assess self-management behaviours using appropriate measures.	I *know how* to assess self-management behaviours, by *listing* measurement approaches appropriate for specific target behaviours (e.g., medication adherence questionnaires, physical activity questionnaires, dietary questionnaires, wearables data).	I *know how* to assess self-management behaviours, by *explaining how to apply* and *interpret* measurement approaches that are appropriate for specific target behaviours (e.g., explaining how open questions are used in an interview; explaining how to use a pedometer to gain insights on physical activity; explaining how to use the medication adherence report scale - MARS).
BC5.2 Compare actual versus desirable health behaviours to identify self-management needs, based on assessment data	I do not *know how* to compare actual versus desired health behaviours to identify self-management needs, based on assessment data.	I *know how* to compare actual versus desired health behaviours to *identify* self-management needs, by *interpreting* assessment data and *identifying* a gap in relation to the desired behaviour (e.g., interpreting pedometer readings and identifying a gap in relation to step count recommendations; interpreting the results of dietary questionnaires in relation to eating recommendations for a chronic disease).	I *know how* to compare actual versus desired health behaviours to identify self-management needs, by interpreting assessment data and having the knowledge about the desirable health behaviour (e.g., interpreting pedometer readings and stating what are the recommendations for step count; interpreting the results of dietary questionnaires and stating what are the diet recommendations for a chronic disease).
BC6.1 Generate with the person opportunities for behavioural change	I do not *know how* to create with the person opportunities to change behaviour (e.g.,1 no knowledge on appropriate questioning, listening and reflective responding); (e.g. 2 wrong conceptions, such as suggesting closed-questions to start a talk, suggesting leading or directive questions, being unable to list active listening strategies).	I know *how to* use communication to generate with the person opportunities to change behaviour but lack knowledge on techniques to initiate health behaviour change talk (e.g., knowledge on appropriate questioning, listening and reflective responding but unable to list preferred techniques to initiate health behaviour change talk).	I know *how to* use communication to generate with the person opportunities to change behaviour and have knowledge on techniques to initiate health behaviour change talk (e.g., knowledge on appropriate questioning, listening and reflective responding, able to list a minimum of one of the preferred techniques to initiate health behaviour change talk: person-initiated discussion; direct questioning, non-personalised initiation).
BC6.2 Assess the extent to which the person wishes and is able to become co-manager of their chronic disease	I do not *know how* to assess the extent to which the person wishes and is able to become a co-manager of his/her chronic disease (e.g., 1 unable to list indicators related to capacities, feelings, beliefs or resources, including self-efficacy, health literacy); (e.g., 2 unable to list indicators, related to things the person does, such as participating in shared decision-making, active information seeking about the condition, active self-management of the condition, participating in patient support or advocacy groups).	I *know how* one or two of indicators related to the person's wishes and ability to become co-manager of a chronic disease (e.g., 1 indicators related to ability, perceived control and feelings, beliefs or resources, including self-efficacy, health literacy); (e.g., 2 indicators related to things the person does, such as participating in shared decision-making, actively seeking information about the disease, actively self-managing the disease, participating in support or advocacy groups).	I *know how* to recognize a range of indicators (>2) of the wishes and ability to become co-manager of a chronic disease (e.g., 1 recognises capabilities, beliefs or resources, e.g., self-efficacy, health literacy); (e.g., 2 indicators related to things the person does, such as participating in shared decision-making, actively seeking of information about the condition, actively self-managing the condition, participating in support or advocacy groups).

Learning outcome	Insufficient level of achievement 0	Moderate level of achievement 1	Good level of achievement 2
BC6.3 Demonstrate how to promote coping skills to manage the physical, emotional, and social impacts of chronic disease in everyday life	I do not *know how* to promote coping skills to manage the physical, emotional, and social impacts of chronic disease in everyday life.	I *know how* to promote coping skills, by merely giving example(s) of coping strategies (e.g., creating a to-do-list, mindfulness).	I *know how* to promote coping skills, by giving examples of problem-focused and emotion-focused strategies relevant for the case (e.g., creating a to-do-list, changing behaviour).
BC6.4 Assist the person to become co-manager of his/her chronic disease in partnership with professionals	I do not *know how* to help a person to become a co-manager of his/her chronic disease in collaboration with health professionals (e.g., 1 share decision-making); (e.g., 2 empowering the person with resources for self-management such as information and directions for support groups).	I *know how* to help the person to become a co-manager of his/her chronic disease in collaboration with professionals, by giving examples of a least one approach in practice (e.g., 1 shared-decision making); (e.g., 2 empowering the person with resources for self-management), without being able to give examples of related communication skills (e.g., paraphrasing, parroting, open-ended questions).	I *know how* to help the person to become a co-manager of his/her chronic disease in collaboration with professionals, by giving examples of at least approach in practice (e.g., 1 shared-decision making); (e.g., 2 empowering the person with resources for self-management); and related communication skills (e.g., paraphrasing, parroting, open-ended questions).
BC7.1 Apply strategies to support the co-operative working relationship between the person and the professional	I do not *know how* to use strategies to support a collaborative working relationship between the person and the health care provider (e.g., adapting the structure of the session to the person's needs avoiding negative interpersonal behaviours, such as impatience; overcoming relational barriers such as talking too much or too little; using the person's summaries to gauge understanding rather than 'teach and tell', solution orientation in the face of challenges, avoiding potential pitfalls such as judging, controlling).	I *know how* to use two strategies to support the co-operative working relationship between the person and the health care professional (e.g., adapting the structure of the session to the person's needs, avoiding negative interpersonal behaviours such as impatience; overcoming relationship barriers such as talking too much or too little; using the person's summaries to gauge understanding rather than "teach and tell", solution orientation in the face of challenges, avoiding potential pitfalls such as judging controlling).	I *know how* to use >2 strategies to support a collaborative working relationship between the person and the healthcare provider (e.g., adapting the structure of the session to the person's needs, avoiding negative interpersonal behaviours such as impatience; overcoming relational barriers such as talking too much or too little; using the person's summaries to gauge understanding rather than "teach and tell", solution orientation in the face of challenges, avoiding potential pitfalls such as judging, controlling).
BC8.1 Demonstrate the importance of collecting holistic information about the person to tailor the behaviour intervention	I do not *know how* to tailor a behaviour change intervention based on information about the person (e.g.1 information about behaviour determinants, such as knowledge about the disease and consequences of adopting/not adopting a health promoting behaviour, memory issues, beliefs about medication necessity, concerns about medication, impulses, stress/anxiety, social support); (e.g.2 information about the target behaviour, such as current step count or fruit intake) (e.g., 3 preferences and resources, such as affinity to new technology, possession of a mobile device, broadband connectivity).	I *know how* to tailor a behaviour change intervention based on limited information about the person, i.e. only one of the three examples below (e.g., 1 information about behaviour determinants, such as knowledge about the disease and consequences of adopting/not adopting a health promoting behaviour, memory issues, beliefs about medication necessity, concerns about medication, impulses, stress/anxiety, social support); (e.g., 2 information about the target behaviour, such as current step count or fruit intake); (e.g., 3 preferences and resources, such as affinity to new technology, possession of a mobile device, broadband connectivity).	I *know how* to tailor a behaviour change intervention based on comprehensive information about the person, i.e. at least two of the examples below (e.g., 1 information about behaviour determinants, such as knowledge about the disease and consequences of adopting/not adopting a health promoting behaviour, memory issues, beliefs about medication necessity, concerns about medication, impulses, stress/anxiety, social support); (e.g., 2 information about the target behaviour, such as current step count or fruit intake); (e.g., 3 preferences and resources, such as affinity to new technology, possession of a mobile device, broadband connectivity).

Learning outcome	Insufficient level of achievement 0	Moderate level of achievement 1	Good level of achievement 2
BC8.2 Demonstrate how to assess behaviour determinants through structured questionnaires, interview and other approaches	I do not *know how* to assess behaviour determinants through structured questionnaires (e.g., Beliefs about medicines questionnaire, Basic Psychology Needs questionnaire, Fagerstrom test for nicotine dependence, regulation of eating behaviour scale), interview and other approaches.	I *know how* to assess behaviours determinants, by listing measurement approaches appropriate for specific determinants (e.g., Beliefs about medicines questionnaire, Basic Psychology Needs questionnaire, Fagerstrom test for nicotine dependence, regulation of eating behaviour scale), interview and other approaches.	I *know how* to assess behaviour determinants, by explaining how to apply and interpret measurement approaches that are appropriate for specific determinants (e.g., explaining how open questions are used in an interview; explaining how to use the Beliefs about Medicines questionnaire).
BC8.3 Discuss opportunities and barriers that influence target behaviours in a person-centred fashion	I am unable to *identify* and *discuss* behaviour determinants for a specific case (e.g.1 individual determinants, such as knowledge about the disease and consequences of adopting/not adopting a health promoting behaviour, memory, beliefs about medication necessity, concerns about medication, impulses, stress/anxiety); (e.g., 2 social support, health policy).	I am able to *identify* behaviour determinants but I don't *know how* to explain their influence in target behaviours in a specific case (e.g., absence of a safe place to walk near home or activity friendly communities may or may not be a barrier for physical activity, depending on the case).	I am able to *identify* behaviour determinants and I *know how* to discuss their influence in target behaviours for a specific case (e.g., explaining how the absence of a safe place to walk near home is not a barrier to physical activity as the person enjoys driving to the seaside).
BC9.1 Recognise the person's views, knowledge and skills, developed through his/her experience with chronic disease, to aid prioritisation of target behaviours	I do not *know how* to *recognise* the opinions and experiential knowledge and skills of the person to prioritise high- or low-level target behaviours (e.g., in a person with obesity prepared to walk more but not contemplating other modalities of physical activity, recommending resistance training instead of aerobic exercise, such as brisk walking).	I don't *know how* to integrate the person's views, knowledge and skills in a limited fashion to prioritise high- or low-level target behaviours (e.g., recognising that brisk walking is ideal in a person living with obesity who is prepared to walk more but recommending consultations with a nutritionist when the persons believes she/he has the knowledge and skills to manage her/his diet).	I *know how* to integrate the person's views, knowledge and skills to prioritise high- or low-level target behaviours (e.g., recognising that brisk walking is ideal in a person living with obesity who is prepared to walk more and accepting that a recommending a nutritionist is suboptimal when the person believes she/he has the knowledge and skills to manage her/his diet).
BC10.1 Discuss BCTs addressing behaviour determinants (opportunities and barriers) with the person	I am unable to *select* any BCT for a specific case.	I am able to *select* one or more BCTs, but I do not know to discuss their alignment with behaviour determinants in a specific case (e.g., selecting "Information about health consequences" but being unable to explain that is adequate for a person in whom lack of knowledge is a barrier to changing behaviour).	I am able to *select* one or more BCTs and I know how to discuss their alignment with behaviour determinants in a specific case (e.g., selecting "Information about health consequences" and explain that is adequate for a person in whom lack of knowledge is a barrier to changing behaviour).

Learning outcome	Insufficient level of achievement 0	Moderate level of achievement 1	Good level of achievement 2
BC10.2 Among BCTs addressing behavioural determinants, decide on which can included in the intervention plan, according to the person's views and resources	I am unable to *provide* an example of *tailoring* BCTs that address behaviour determinants based on person's views and resources.	I am able to *provide* one example of *tailoring* BCTs that address behavioural determinants based on a person's views and resources (e.g., action planning to address fatigue as a barrier to physical activity).	I am able to *provide* two or more examples of *tailoring* BCTs that address behavioural determinants based on the person's views and resources (e.g., 1 action planning to address fatigue as a barrier to physical activity); (e.g., 2 information about health consequence to address lack of knowledge about the importance of physical activity).
BC11.1 Demonstrate critical understanding of BCTs appropriate for brief or long-term behaviour interventions	I am unable to appropriately *select* BCTs according to intervention length in a specific case.	I am able to *provide* one example of a BCT adequate to intervention length in a specific case (e.g., feedback on outcomes of behaviour for a brief intervention where multiple contacts are envisaged).	I am able to *provide* two or more examples of BCTs adequate to intervention length in a specific case (e.g., 1 feedback on outcomes of the behaviour for a brief intervention when multiple contacts are included); (e.g., 2 review behavioural goals for a long intervention).
BC12.1 Apply behaviour change techniques according to the intervention plan	I am unable to *explain* how to apply BCTs according to the intervention plan.	I am able to *provide* an example of *applying* one BCT according to the intervention plan.	I am able to *provide* two examples of *applying* BCTs according to the intervention plan (e.g., 1 when using feedback on behaviour, explaining how it can be operationalised across sessions); (e.g., 2 when using review behaviour goals, explaining how it can be operationalised across sessions).
BC12.2 Assess the person's target behaviour regularly using appropriate data collection approaches	I do not *know how* to assess person's target behaviour using appropriate data collection approaches (e.g., medication compliance questionnaires, physical activity questionnaires, nutrition questionnaires, wearable device data, and interview).	I *know how* to assess person's target behaviour regularly, by listing appropriate measurement approaches (e.g., using medication adherence questionnaires, physical activity questionnaires, dietary questionnaires, and wearables data across sessions).	I *know how* to assess person's target behaviour regularly by explaining how to apply and interpret measurement approaches that are appropriate for specific target behaviours (e.g., explaining how open questions are used in an interview, explaining how to use a pedometer to gain insights on physical activity; explaining how to use the medication adherence report scale - MARS across sessions).
BC12.3 Demonstrate how to monitor the implementation of BCTs as part of the intervention plan	I do not *know how* to monitor the implementation of BCT as part of the intervention plan (i.e., assessing whether the person is using the BCT or BCT bundle and whether it is working).	I *know how* to ascertain if the person is using the BCT or BCT bundle but I am unable to *explain* ways to assess if BCTs are working (e.g., explains how they would inquiry if self-monitoring using a digital activity tracker was implemented but does not collect data to ascertain its potential effect).	I *know how* to ascertain if the person is using the BCT or BCT bundle and I am able to *explain* ways to assess if BCTs are working (e.g., interpreting step count in a person that implements self-monitoring of behaviour via a pedometer).

Learning outcome	Insufficient level of achievement 0	Moderate level of achievement 1	Good level of achievement 2
BC12.4 Demonstrate how to redefine the intervention plan as appropriate	I do not *know how* to redefine the intervention plan in light of changes in behaviour determinants and/or results.	I *know how* to redefine the intervention plan, but I do not *take into account* all relevant information about the person (e.g., integrating only information about unsuccessful results without considering changes in behaviour determinants).	I *know how* to redefine the intervention plan considering all relevant information about the person (e.g., integrating information about unsuccessful results whilst considering changes in behaviour determinants).
BC13.1 Plan the end of the intervention and the use of BCTs and resources beyond its end to promote maintenance of the target behaviour	I do not *know how* to plan the end of the intervention (e.g., plan for the use of BCT and resources after the end of the intervention in order to maintain the target behaviour).	I *know how* to plan the end of the intervention, but I am unable to *suggest* self-enactable BCTs to promote maintenance of the target behaviour, i.e., BCTs that the person can use on her own, such as action planning, self-monitoring of behaviour, problem solving. Partially aware of the resources that promote the maintenance and maintenance of target behaviour after interventions, but I do not *know how* to recommend them to them.	I *know how* to plan the end of the intervention and I am able to *suggest* self-enactable BCTs to promote maintenance of the target behaviour, i.e. BCTs that the person can use on her own, such as action planning, self-monitoring of behaviour, problem solving.
BC14.1 Share information and adequate educational materials according to individual factors (e.g., knowledge gaps, health literacy level and preferences)	I do not *know how* to select information and appropriate educational materials; according to individual factors (e.g., 1 suggesting a MOOC for a person with good internet usage and affinity to new tech); (e.g., 2 using paper-based infographics in a person without access to a computer or a mobile device); (e.g., 3 suggesting a website directed at a knowledge gap to a person with good digital health literacy).	I am able to *list* available educational resources and materials but I do not *know how* to tailor them to individual factors (e.g., 1 suggesting a MOOC for a person with good internet usage and affinity to new tech); (e.g., 2 using paper-based infographics in a person without access to a computer or a mobile device); (e.g., 3 suggesting a website directed at a knowledge gap to a person with good digital health literacy).	I am able to *tailor* available educational resources and materials to individual factors (e.g., 1 suggesting a MOOC for a person with good internet usage and affinity to new tech); (e.g., 2 using paper-based infographics in a person without access to a computer or a mobile device); (e.g., 3 suggesting a website directed at a knowledge gap to a person with good digital health literacy).

Guidance for educators

Using the case study on the selected target behaviours in group work

This case study was conceived primarily to achieve learning outcomes in behaviour change related to increasing physical activity, enhancing diet, adhering to medication, and monitoring and managing symptoms

We suggest key steps to be followed before, during and after class, using **group work**.

Before class: preparing

1. **Select the learning outcomes and questions for in-class discussion**: based on learning priorities and time available, prioritise learning outcomes and select related questions. Bear in mind that the same case study can be used in consecutive sessions, covering different questions, moving from "problem identification" (assessing self-management needs and behaviour determinants) to "solution" (implementing behaviour change strategies). The same case study can also be matched to different study levels.

Tips

- It takes time for students to settle down and focus on proposed tasks, to move at a reasonable pace and avoid frustration plan for less rather than more questions.
- Our experience suggests that 3 to 4 questions can be explored in a 100-minute session for groups of 4 to 5 students.
- The first question should get students engaged in thoughtful talk: prefer a question that all students should be able to answer readily.

2. **Provide context to the case that fits the specificity of a discipline and country, if necessary:** to make learning more meaningful, it may be useful to give additional context to the case, particularly regarding the intervention setting and the professionals supporting the person. For example:
    a. Luuk may go to a dietitian to receive behaviour change support.
    b. Luuk may have an exercise physiologist coming to his home to promote physical activity and health.

When using the case study in interprofessional education, contextual information may involve different professionals.

3. **Draft an answer for each selected question**: based on the suggested accompanying reading (and potentially other resources), draft an answer for each selected question, which may encompass possible nuances.
4. **Ascertain what do students already know that applies to the case**: if needed, pair in-class work with a pre-class reading assignment that introduces or recaps concepts (e.g., “Suggested accompanying reading”).
5. **Decide how the case discussion will be conducted:** choose how groups will share the outputs of their work (e.g., pitch presentations or, for each question, one group shares the answer and others comment). Moreover, decide whether you will choose a person in each group to present the group’s answer and reasoning or whether groups will be allowed to choose a facilitator or record keeper, who will report on behalf of the group.

Tips

- Calling on different students ensures diversity in the discussion and wider participation.
- To keep the class on track and moving at a reasonable pace it may be helpful to have groups reporting on questions consecutively at agreed time intervals, as opposed to sharing group outputs in bulk towards the end.

6. **Decide if group work is graded**: assessing students can motivate them to complete pre-class reading, as well as stimulating in-class engagement. Assessment criteria are provided for grading activities related to each learning outcome. Criteria can be weighted, if their relative importance is judged to be different (e.g., based on the perceived importance of the learning outcome and students’ workload). Providing assessment criteria in advance (and their weights, if applicable), promotes a clearer understanding of what is expected from students.

Tips

- Keeping questions for in-class work to a manageable number facilitates in-class assessment and avoids situations of cognitive overload for students, in which they will struggle to understand what is expected from them.
- Use assessment criteria tables in an editable format, available in the Train4Health website (Resources tab), to create marking sheets for in-class use containing the selected criteria only. Share the sheet for in-class use advance, to help students understand what they need to know and do. Also sharing the self-assessment sheet in advance provides a tool for students to ascertain their performance and enhance their contribution to group work.

7. **Plan a way to organise groups' outputs that shows accomplishment and summarises points**: this could take the form of a blackboard plan (e.g., organising information according to learning outcomes and questions) or PowerPoint slides with information that can be completed based on groups' outputs.
8. **Decide whether follow-up assignment is due:** for example, writing-up a summary of learnings in relation to proposed learning outcomes or presenting answers revised considering class discussion can be useful to strengthen in-class work.

Tips

- To make the workload more manageable to educators and students follow-up assignments may be asked for only a fraction of the in-class sessions during a term.

In-class: leading the case discussion

1. **Introduce the case**: provide the "Person's profile" to students and allow them time to get familiar with its content; an alternative is asking students to read the case ahead of class. Ensure that students have a clear understanding about the information conveyed in the person's profile (e.g., ask students to summarise key points).
2. **Provide directions regarding what students are supposed to do and accomplish**: divide students into groups or convene pre-formed groups, explain the ground rules and signpost time for discussion.

3. **Facilitate group work and monitor time**: circulate among groups, if needed clarify doubts.

Tips

- If the room allows, a U-shaped seating arrangement for each group works best than circles. The open part of the U should face the blackboard. This arrangement allows all students to see one another and, once discussion is convened, to see the instructor and the blackboard.

4. **Facfacilitate the case discussion**: listen and respond to students who are sharing the groups' outputs or who jump into the discussion and connect their ideas; extract key points as previously planned (e.g., blackboard, PowerPoint).

Tips

- Calling on different students can be done by random selection or by calling on students showing "intention movements" (leaning forward, nodding their head, frowning, opening their mouths as if beginning to speak).
- To avoid having the same person repeatedly dominating the discussion, use questions such as "Does anyone have a different answer?" or "Anne, what do you think of this proposal?".
- Paraphrasing can be useful to connect students' ideas (e.g., "John just mentioned X, and this squares with Anne's answer on behalf of her group")

After class activities

1. **Managing follow-up assignments, if required.**

2. **Reviewing the teaching experience for improvement purposes**: this exercise can be done individually or together with other instructors of the same module.

Using the case study in the selected target behaviours with other approaches

Other approaches to case-based learning include discussing the case as the whole class or role-play. For example, a student or a simulated patient can role-play Luuk de Vries, following the person's profile as a script while another student is briefed to perform tasks related to assessment, plan, delivering the behaviour change intervention or follow-up (learning outcomes related to BC5, BC8, BC10, BC11, BC12 e BC13). Creating a checklist may render feedback more informative.

Expanding the use of this case study to other target behaviours or topics

This case study was conceived primarily to achieve learning outcomes in behaviour change related to physical activity, diet, medication adherence and monitoring and managing symptoms. Nonetheless, it may be used in different ways, depending on the needs and purposes of educators. This involves changing the person's profile, adding extra information or exploring different questions. Examples are:

- **Exploring other target behaviour(s)** (e.g., sleeping habits, adherence to regular health check-up and other).
- **Develop short descriptions depicting newly diagnosed disease(s)** (e.g., type 2 diabetes, ischemic heart disease, chronic obstructive pulmonary disease or other) **or events** (e.g., worsening or ameliorating of symptoms; myocardial infraction or a stroke, recent hospitalization, medical condition of a family member and others).

The latter changes may render the case study useful for pursuing learning outcomes in other topics unrelated with behaviour change, facilitating a holistic case-based learning.

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