WORKPACKAGE 3

CLINICAL CASES

FINAL REPORT, AUGUST 2018

Strategic Partnership IMPECD – Improvement of Education and Competences in Dieteticswww.impecd.eu

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Work package 3- Clinical Cases

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The objective of this work package was to

- establish five reviewed clinical cases (based on real clinical patient cases) and
- develop supportive teaching and training material for the MOOC (WP O1).

Description of work (broken down into activities)

- O3/A1 Definition and allocation of clinical cases
- O3/A2 Establish guidelines for generating cases.
- O3/A3 Production of clinical cases and review process
- O3/A5 Production of supporting materials
- O3/A6 Evaluation of five clinical cases by peer reviewing

Milestones: are displayed with planned date (application) and end date

	Nr	Milestone	Planned	Reached
A1	3a	**Definition and allocation of cases**	2/2016	2/2016
A2	3b	**Establish guidelines for generating cases**	3/2016	6/2016
A3	**Production of clinical cases and review process**			
	3c	Finished 1st batch of five reviewed clinical cases, ready for testing	2/2017	2/2017
	3d	Developed evaluation plan for cases is available	3/2017	3/2017
	3e	Finished complex scenarios (2nd batch) of five reviewed clinical cases	2/2018	6/2018
	3f	Adapted evaluation plan for cases is available	3/2018	3/2018
A4	**Production of supporting materials**			
	3g	Analysis of required supporting material available	10/2016	3/2017
	3h	Draft versions of supporting material available	3/2017	3/2017
	3i	Supporting material available	2/2018	6/2018
A5	**Evaluation of clinical cases**			
	3j	Results testing batch 1 cases at ISP 1 available	3/2017	6/2017
	3k	Results testing complex cases (batch 2 cases) at ISP 2 available	4/2018	6/2018
	4	Five complex multi-level reviewed clinical cases are available	5/2018	6/2018

Table 1/WP03: Overview of Milestones and intermediate steps in Work package 3. Note: clinical cases have been developed in two phases in order to be able to check for feasibility i.e. during the Intensive Study Programs.

- All initially planned deliverables and milestones for the time of reporting have been reached.

O3/A1 Definition and allocation of cases

The first milestone has been reached in February 2016. The decision on the topics of the clinical cases and its allocation over the consortium partners have been finalized during the 2nd transnational team meeting in Fulda. In the table above (Table 1/WP03) an overview of the topics is depicted. The topics are related to the most common non-communicable diseases as they have been reported by the World Health Organization and others.

have been collected within the consortium. The primary elements are (i) that the project has its particular layout, (ii) each HEI can work within the MOOC, (iii) the learning environments should be suitable for case-based learning, (iv) the MOOC should provide several testing and communication tools, (v) the learners progress should be monitored and (vi) flexibility concerning up-/download is necessary e.g., learners can also upload files. The literature research of a bachelor student regrading the learning theories and existing MOOCs in the field of dietetics supported the requirements, and qualitative interviews were conducted with students (bachelor thesis of Petra Raffetseder, a student of the HEI St. Pölten in 2015/16). The primary results of this thesis are that dietitians appreciate a MOOC for training the dietetic practice and value the

international exchange. Furthermore, a logic and realistic way of the clinical case presentation is of great importance. Additionally, the design of the MOOC should be attractive for the learners.

O3/A2 Establish guidelines for generating cases

Since the development of clinical cases is complex, it was based on and developed in parallel with the Dietetic Case Process (DCP). At first, a concept guideline and format for generating cases (milestone 3b) was provided. This concept has been further discussed with the consortium and adapted during the project. An example of a thoroughly discussed topic was the inclusion of precise descriptions of how to interpret and use junctions in the case (see A3 for a detailed description). Therefore, the initially planned deadline for March 2016 was postponed to June 2016.

The guidelines, amongst other things, describe the requirements and structure for a case, e.g. the client/patient, an indication of the daily diet and medical history. However, for the project, the development of specific learning outcomes for the case needed to be considered and included (see also WP 04/05). Another prerequisite was that every case should follow the process steps of the DCP (WP 02).

Finally, a further distinction within each DCP step was made to limit the number and type of questions, e.g., three evaluation questions per step (see WP 04/05). Finally, a variety of visual and audio options included in the MOOC needed to be distributed during the development of the cases (video, quizzes, assignments. etc.).

A significant change concerning this work package is the change in the clustering of the cases. This adaptation was already part of the interim report. The consortium initially planned to develop ten linear clinical cases, following five dietetic care process steps. With this linear learning process, the clinical case team felt that learners would miss a valuable learning experience. The intention was to include real-life issues for dietitians; such as "What happens if you make the wrong dietetic diagnosis, followed by an ineffective dietetic intervention?" Thus, instead of 10 linear cases, we proposed to develop five cases with two stages (batch 1 and 2) during the IMPECD project. Each case starts with a somewhat common dietetic problem (batch 1) and is followed by a complex multi-level scenario (batch 2). Within the cases developers consider the fact that if a learner makes a wrong decision (see Figure 2/ WP03 for the example), the student should be able to get back to the point where he/she made this mistake. So, this complicated multi-level case adds an extra pathway, which includes a decision node where students follow a different scenario if they, for example, make a wrong decision by ignoring evidence-based dietetic recommendations. It could also occur that a dietetic intervention will be unsuccessful or that the case becomes more difficult because of a new dietetic problem.

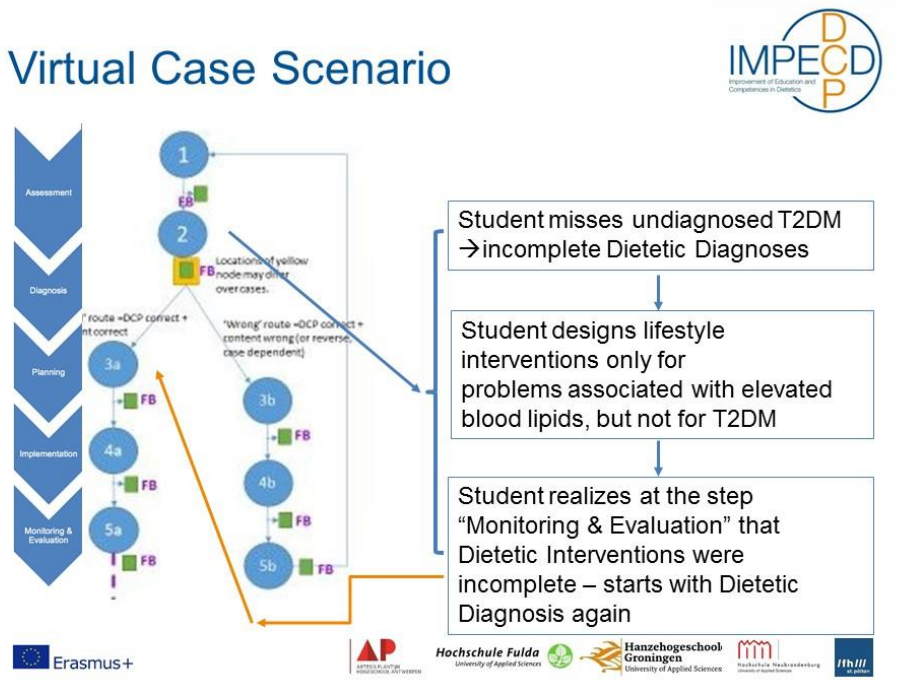

Figure 2/WP03: Complex multi-level virtual case scenario for T2DM

The guidelines (Guidelines and Format Clinical Cases IMPECD) are presented on the website of the project: impecd.fhstp.ac.at.

O3/A3: Production of clinical cases and review process

Within each team, the two batches of cases have been developed by an expert and colleagues. Each case was also offered to another group in the IMPECD consortium for reviewing (see Table 2/WP03). Moreover, all cases have been reviewed by experts from the field. Besides the content base, the area specialists evaluated whether the case was realistic and whether they could come across such a situation or patient during their work.

	Topic batch 1	Topic batch 2	Developers	Reviewing partners and experts
1	Gestational Diabetes Mellitus	Chronic kidney disease (+ ageing process)	Marleen Adam, Bente Le Bruyn, Eline Baete (Antwerpen)	Daniela Wewerka-Kreimel (St. Pölten), Renate Heine-Bröring(Groningen)
2	Coronary heart disease and hypertension	Diabetes Mellitus type 2	Alexandra Kolm (St. Pölten)	Marleen Adam, Bente Le Bruyn, Eline Baete (Antwerpen)
3	Obesity	Bariatric surgery	Shelly Rachman-Elbaum, Luzia Valentini, Sabine Ohlrich-Hahn, Karoline Lange, Daniel Buchholz (only Batch 1) (Neubrandenburg)	Alexandra Kolm (St. Pölten), Maaike Roemeling-Walters (Groningen)
4	Lower gastrointestinal disorders: coeliac disease	Lactose intolerance, coeliac disease	Kathrin Kohlenberg-Müller, Christina Gast (Fulda)	Shelly Rachman-Elbaum, Luzia Valentini, Sabine Ohlrich-Hahn, Karoline Lange, Daniel Buchholz (only Batch 1) (Neubrandenburg)
5	Colorectal Cancer and malnutrition	Metastases, refeeding syndrome, enteral (tube) feeding	Renate Heine-Bröring, Maaike Roemeling-Walters (Groningen)	Kathrin Kohlenberg-Müller, Christina Gast (Fulda)

Table 2 /WP03 Batch 1 and 2 clinical cases developed in Work package 3

Milestone 3c

Development of the first five clinical cases, ready for testing (batch 1)) has been reached in February 2017. These five cases were implemented in the MOOC and tested during the Intensive Study Program (ISP) May 2017 in Antwerp (see milestone 3j for specific examples of the input students generated during this ISP). There were three critical aspects the developed case should meet (also included in the guidelines), namely: (i) based on a real clinical case; (ii) reviewed by an expert; (iii) created in cooperation with students. For the first batch, all were (partly) based on a real clinical situation from practice experienced by the team or students from their practical placement. Furthermore, the first batch was reviewed by experts, i.e., a registered (senior) dietitian or a physician (specialized in the topic of the particular case). Students have assisted in developing all case. For example, they were involved in the part of storytelling, and they critically reviewed the theoretical and practical aspects of the case related to their experience in the field. The students also gave feedback on the structure, the clarity, and level of difficulty.

Milestone 3d

(Evaluation plan for cases). This part was needed to evaluate the cases during the Intensive Study Program (ISP) in Antwerp (2017). During this ISP, students were asked a few questions. For example about the content and structure of the case. Students were also invited to give open

feedback about the 'likeability' and attractiveness of the case in the MOOC. All this feedback was used to improve the cases afterwards.

Milestone 3e

The complex scenarios of the second batch were finished in June 2018. See Table 1/WP03 for the topics of these scenarios. They were implemented in the MOOC and tested during the ISP in May 2018 in Neubrandenburg. See milestone 3k for specific examples of the input students generated during this ISP. Again, all cases were based on a real clinical situation reviewed by experts and developed in cooperation with students.

Milestone 3f

Adapted evaluation plan for cases) was ready before the ISP in Neubrandenburg. The first evaluation plan (milestone 3d) was aligned with the experiences during the first ISP. Some questions were added regarding the collaboration between students while solving the case. Also, in-depth questions concerning the online course were asked; such as, what would help the student to collaborate online with international colleagues; or what aspects they consider as barriers to this online collaboration with international colleagues. Moreover, students were asked if they had ever worked collaboratively in a global online setting and which advantages/disadvantages they experienced.

O3/A4 Production of supporting material

The analysis of required supporting material, the draft and final version (milestones 3g, 3h, and 3i) is completed. After the first ISP, input was delivered by students that they liked the supporting materials but also wanted more of it. This feedback was considered when developing the complex scenarios for batch 2. For all cases in the MOOC supporting materials such as video's, podcasts, pictures, webinar, and quizzes are specially developed and used. For instance, additional elements to add to the DCP-MOOC, are prepared and produced by team Groningen: videos on the fundamental principles of the ICF and on formulating the PASR statements. Both are available at https://impecd.fhstp.ac.at/.

O3/A5 Evaluation of clinical cases

The results of the batch one case testing at ISP 1 (milestone 3j), were collected during the first ISP in Antwerp (May, 2017) and improvements were made and translated to the MOOC in June 2017. The input for improvement concerned e.g. (see for the total input WP 05):

- expanding case story, make more realistic and interactive
- use more pictures

- create PDF file for personal data of the patient
- feedback should include a color code (right answer green, wrong answer red).
- make easy questions more challenging

All the input was considered and the cases were adjusted based on the given points.

In May 2018, the results of the testing regarding the complex cases (batch 2 cases) during the ISP 2 in Neubrandenburg (milestone 3k), were collected. Again, all the feedback was evaluated, and changes were made in the cases and then translated to the MOOC in June 2018. The input for improvement concerned e.g. (see for the total input WP 05):

- integrate motivational aspects, such as, 'Well done!'
- give more information concerning certain topics, such as, ICF- and PASR-statements
- reduce number of answer possibilities
- give more explanation in the feedback
- give some questions more introductory information
- solve some technical issues in the MOOC (e.g. feedback was missing).

All the input was considered and the cases were adjusted based on the given points.

The final **milestone 4**, five complex, multi-level reviewed clinical cases are available, was met in June 2018. See Table 1/WP03 for the topics of these five cases including complex scenarios. The topics from the initially set up plan for batch 2 are used in the complex scenarios of the cases.

The course of clinical cases and implementation in curriculum

One of the goals for work package O3 was to develop a course of clinical cases, worth 5 ECTS, and implement them in the curriculum of each HEI. Consortium HEIs incorporate the course in their curriculum (worth 5 ECTS for working through all the cases in the MOOC, including the MOOC-DCP, 1 ECTS per case) starting with 2019. Also, the developed 'MOOC' are considered as a collection of online modules that are shareable with other parties to improve the competencies of working in a process- driven way.

Challenges in work package 3

Within work package 3, the search for a clear outline of decision nodes to structure cases was challenging. As presented before, it resulted in a clear guideline of case development in which the virtual patient can be presented in a situation as real as possible.