Guidelines for VP repurposing to different language and discipline

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Introduction

Description of original VP and original educational setting

The original case has been selected from a list provided by the Ludwig-Maximilian-University in Munich. The name of the original virtual patient (VP) was Meissner who presented with problems connected with gastrology/oncology. The final diagnosis of the case was MALT Lymphoma (ICD10: C85). The target group of the case were students in their final years of undergraduate study.

ID	evip:vp: 298313
Title	77-jähriger Patient mit Bluterbrechen
Description	A 77 yr old patient with bloody vomiting
Authors	R. Riepl, K. Baur, S. Fleissner
Classification	ICD10: C85 (MALT Lymphoma)
Context	Undergraduate

Brief description of VP format

The case had been initially written in German language and authored in CASUS system. The structure was linear (consisting of 27 cards). The exported text contained 6449 words (43748 characters without spaces), 18 images (in PNG and JPEG format), 1 video (MOV) and 23 interactive questions.

	Case before repurposing
System	CASUS
Structure	Linear
Cards	27
Words	6449
Characters (without spaces)	43748
Images	18 (5 gastroscopy pictures, 2 ECG pictures, 5 CT scans, 1 table with laboratory results, 5 others)
Videos	1
Questions	23 (7 freetext, 1 Sorting, 12 MCQ, 1 Laboratory values, 2 Underline)

Methods and Materials

Selection criteria

The selected case includes detailed differential diagnostics of an important symptom - bloody vomiting and fits into the objectives of the Gastrology and Surgery course in Nursing at Jagiellonian University Medical College (3rd year). It presents an example of a rare disease, which could be potentially interesting for undergraduate students.

What type of repurposing was done

The case had been repurposed from the German language into Polish. Next, the case has been repurposed from Medicine into Nursing (discipline repurposing). The text was translated by a Polish physician with profound German language knowledge (resident in a Polish hospital in southern part of Lesser Poland) and repurposed by two subject matter experts in nursing surgery who work at the Jagiellonian University Medical College.

Translation included changing of German names – the VP was renamed from "Meissner" to "Myszkowski" in order to sound more natural with respect to the Polish culture.

Repurposing involved multimedia localisation – e.g. table with laboratory tests (Fig 1).

Laborwerte	Werte Herr Meissner	Normalwerte für einen Mann
Hb	8,5	14 – 18 g/dl
Erys	3,1	4,4 – 6,3 G/l
MCV	89	86 - 98 fl
MCH	28	27 – 32 pg
Thrombos	165	150-400 G/l
Na	141	135 - 150
K	4.4	3,5 – 5,5
Gesamtes Eiweiß	4,8	6,1 – 8,2 g/dl
Albumin	3,1	3,5 – 5,0 g/dl
HN	24	9 – 24 mg/dl
Creatinin	1,1	0,5 – 1,2 mg/dl
g-GT	6	6 - 28 U/l
BZ	127	70 – 130 mg/dl pp
Quick	77	70 – 100 %

Badania laboratoryjne	Wyniki Pana Myszkowskiego	Wartości prawidłowe dla mężczyzny
Hb	8.5	14-18g/dl
Erytrocyty	3.1	4.4-6.3g/l
MCV	89	86-98fl
MCH	28	27-32pg
Płytki	165	150-400tys/l
Na	141	135-150 mmol/l
K	4.4	3.5-5.5mmol/l
Białko całkowite	4.8	6.1-8.2g/dl
Albumina	3.1	3.5-5.0g/dl
Mocznik	25	9-24mg/dl
Kreatynina	1.1	0.5-1.2mg/dl
GGTP	6	6-28U/l
Glukoza	127	70-130mg/dl po pos.
PT	77	70-100%

Fig 1. Repurposing of table with laboratory tests

Content of the case was discussed and repurposed to fit into the objectives of the Gastrology and Surgery course in Nursing. The original case included differential diagnosis of gastric bleeding, final diagnosis of MALT lymphoma and surgical treatment of diagnosed disease. During repurposing, the original case was divided into two cases: first – “non-surgical” and second – “surgical”. The first repurposed nursing case ends with diagnosis of gastric tumor. The second case presenting the surgical treatment is due to be repurposed soon.

The decision of splitting the translated virtual patient in two separate cases has been taken because the original material was in the opinion of the repurposing team too large and contained too much information for one class/session in the target course.

A few cards/pictures were deleted from the original case because they weren’t useful for nursing (e.g. interactive scheme used for physical examination (Fig 2) or diagnostic video), some information was added anew. Subject matter experts focused their repurposing on nursing diagnostics and interventions, which are different from the tasks carried out by physicians. Nurses, for example, take care of patient before gastroscopy and prepare him for this examination – i.e. they explain to the patient the aim and the progress of this diagnostic process. Nurses should also know how to prepare injection fluid for patients. Such knowledge is checked by some newly added questions (Fig 4) and it replaces the description of detailed medical diagnostics steps carried out by physicians.

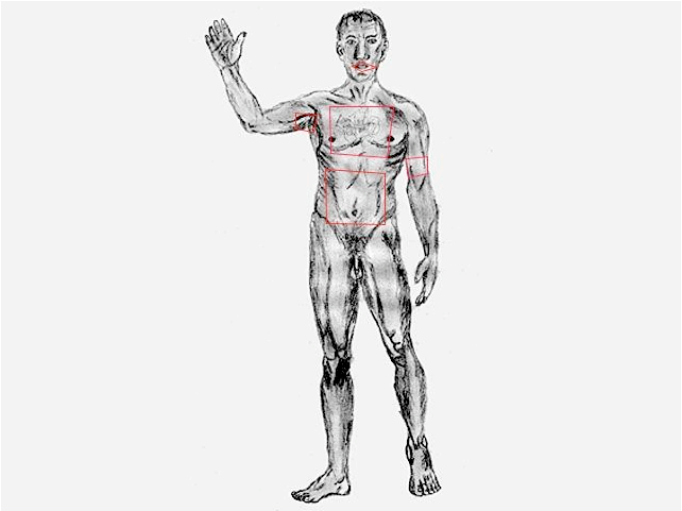

Fig 2. Example of deleted picture

The characteristics of the national healthcare system have been also taken into account. For instance picture presenting German ambulances was exchanged with photograph of Polish cars. (Fig 3).

Fig 3 Repurposing of images presenting medical equipment characteristics for a healthcare system (Left: German ambulance, Right: Polish ambulance)

	Case before repurposing	Case after repurposing
System	CASUS	CASUS
Structure	Linear	Linear
Cards	27	25
Words	6449	4453
Characters (without spaces)	43748	30279
Images	18 (5 gastroscopy pictures, 2 EKG pictures, 5 CT scans, 1 table with laboratory results, 5 others)	15 (1 picture of patient, 5 gastroscopy pictures, 3 table with laboratory results, 3 schemas, 3 others)
Videos	1	-
Questions	23 (7 Freetext, 1 Sorting, 12 MCQ, 1 Laboratory values, 2 Underline)	21 (4 Freetext, 1 Sorting, 13 MCQ, 1 Laboratory values , 2 Underline)

Steps involved in repurposing

- Content export from CASUS in MS Word format
- Translation of the original case in MS Word format
- Translation and repurposing of the media files
- Dividing translated case in to two cases
- Change of the case by the subject matter expert
- Feedback from the Learning Technologist
- Clearance of copyright issues
- Insertion of the case from Word files into CASUS
- Final verification of the case by the subject matter expert
- Presentation of the case to students (planned in March 2009)
- Students' evaluation of the case (planned in March 2009)
- Refinements of the case in response to students' feedback (planned)

Hardly any personal contact within the repurposing team was required – the team communicated mainly via e-mail (sometimes also using Skype).

How the work was planned

One person has been assigned to coordinate the repurposing process of this case. Her role was to communicate via e-mail with the translator, subject matter experts, learning technologist and teachers who will present the case to the students. In her responsibility was also to control the quality of the work in the repurposing process. If somebody lagged behind with the assigned work e-mail reminders were posted. By the end of the work, each member of the team has been asked to assess their expenditure of time.

Brief outline of skill set required

- TRANSLATION: Polish as native language, proficiency in the German language, knowledge of medical terminology
- NURSING REPURPOSING: Knowledge of Polish nursing and healthcare procedures and experience of working as a nurse
- TECHNICAL REPURPOSING:
    - Knowledge of copyright and patient's data confidentiality issues
    - Basic skills in
        - Image processing (Paint Shop Pro, Power Point)
        - VP authoring systems (CASUS)

Results

How the content was enriched

The case has also been enriched. In the situation of discipline repurposing most of changes consist of deleting medical content and adding descriptions of tasks typical for nursing profession. New information was added as a new cards, new questions and comments (Fig 4), new pictures and schemas (Fig 5 - 7).

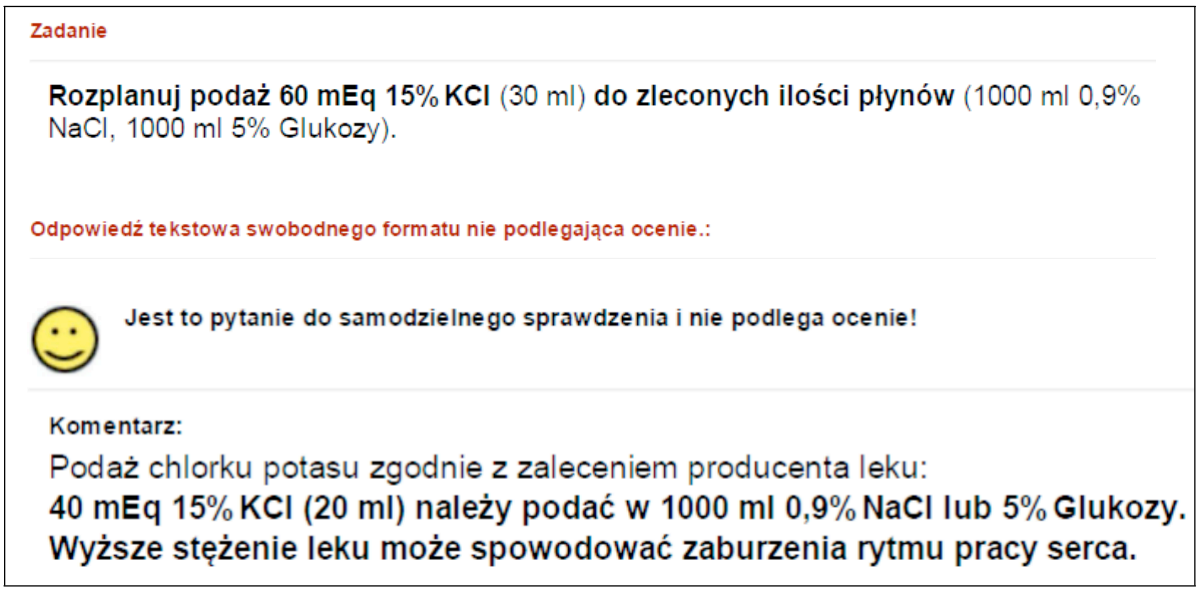

Fig 4. Added question about preparing drip for patient

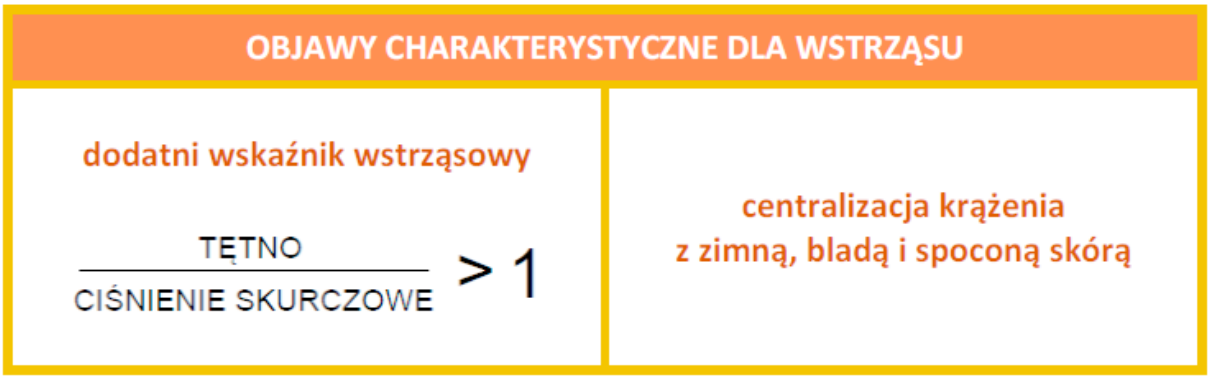

Fig 5. Example of added table – symptoms of shock

Fig 6. Example of added scheme – nursing procedures

Fig 7. Example of added picture

New learning goals and references recommended for the Polish students as text books, scientific papers, guidelines, were included (Fig 8.).

Cele edukacyjne zaprezentowanego przypadku wirtualnego pacjenta:

- Rozpoznanie diagnoz pielęgniarskich z uwzględnieniem hierarchii ważności (w przypadku pacjenta z krwawieniem wewnętrznym).
- Ustalenie celu działania i zaplanowanie interwencji pielęgniarskich w opisanym przypadku.
- Wykazanie wiedzy na temat diagnostyki oraz metod postępowania terapeutycznego w przypadku pacjenta z krwawieniem wewnętrznym.
- Wykazanie postawy zrozumienia sytuacji chorego i odpowiedzialności za stan pacjenta.

Literatura

1. **Fibak J.** (red.) *Chirurgia.* PZWL Warszawa 2006.
2. **Kulig J., Nowak W.** (red.) *Ostry brzuch.* PZWL Warszawa 2007.
3. **Walewska E.** (red.) *Podstawy pielęgniarstwa chirurgicznego.* PZWL Warszawa 2006.
4. **Kózka M., Płaszewska – Żywko L.** (red.) *Diagnozy i interwencje pielęgniarskie.* PZWL Warszawa 2008.

Fig 8. New learning goals and references

How long it took per step and in total

The repurposing team consisted of four members. The table below presents the time efforts for the respective roles.

Role	Time
TRANSLATION	10 hours
NURSING REPURPOSING	34 hours
TECHNICAL REPURPOSING	5 hours
Total	**49 hours**

The repurposing workflow

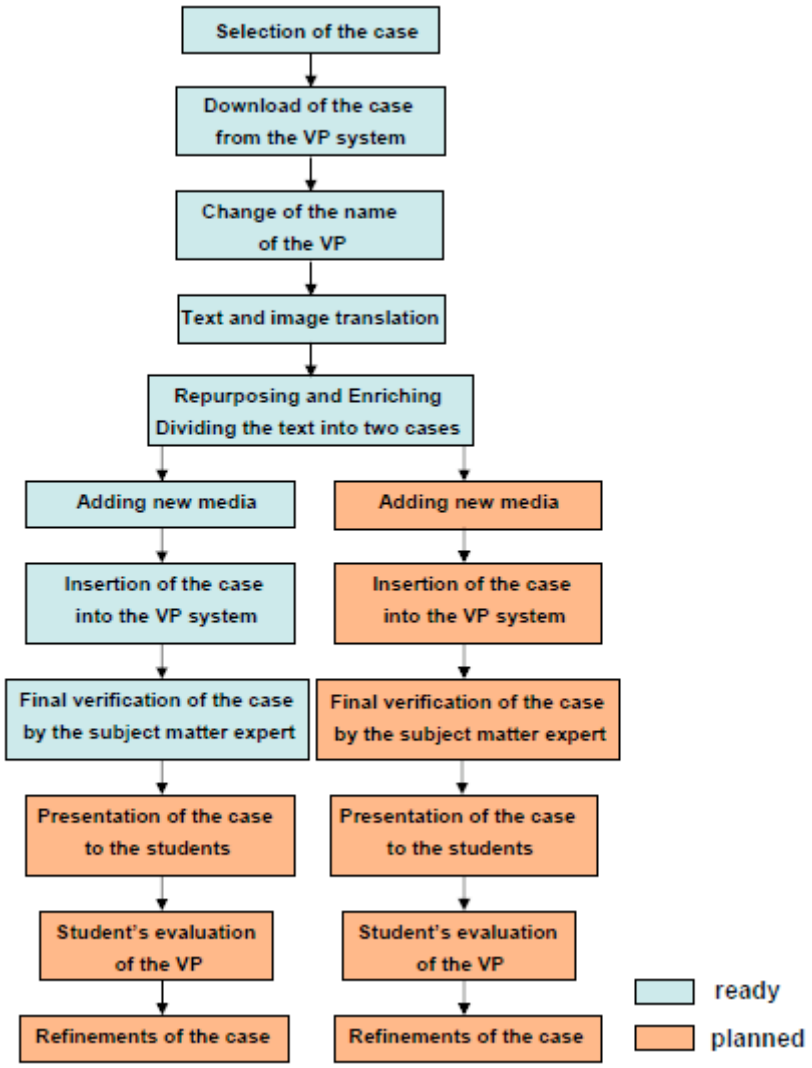

Fig 9. Workflow of the language and cultural repurposing applied while adapting the case evip:vp:1000201

How the repurposed VPs were evaluated

The case has been evaluated at the end of the repurposing process by subject matter experts as containing lot of interesting information presented in a way that is more appealing than traditional text book. Our specialists confirmed that work on repurposing of case was a challenging activity. They haven't done this kind of educational materials so far and it was a time-consuming activity, but worthwhile.

The case is planned to be shown to nursing students during gastrology and nursing surgery course in March 2009. Further evaluation studies will be carried out with students in future courses.

Discussion and conclusions

Based on the experience collected while repurposing this case we came to the following general conclusions.

- Selection of one person for the role of the case's repurposing coordinator proved to be efficient
- Translations should always be made by a translator with a medical background (physician, student in final years of medical study)
- Repurposing from medicine into nursing is time-consuming and a challenging activity, especially for someone who hasn't had experience in preparing this kind of educational material so far.

References

[1] Stachoń A.,Walewska E.,Scislo L.,Matuszyk D.,Dziedzic M.,Kononowicz AA. "Authoring and implementation of virtual patients in nursing – the new challenge at the Jagiellonian University Medical College", International Conference on Virtual Patients, Kraków, 2009 (accepted)