

# VIRTUAL PATIENT IN PHARMACY EDUCATION

## HOW TO MAKE IT WORK AND WORTH

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# Virtual patient

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„interactive computer simulation of real-life clinical scenarios for the purpose of medical training, education, or assessment” \*

## Advantages:

- ▶ self-directed access and learning
- ▶ test of knowledge and skills in a safe environment
- ▶ exposure to rare cases
- ▶ solve some ethical problems
- ▶ easy to update knowledge
- ▶ less stressful learning

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\* Ellaway R, Candler C, Greene P, Smothers V. MedBiquitous. Baltimore, MD: MedBiquitous; 2006. An Architectural Model for MedBiquitous Virtual Patients: MedBiquitous White Paper . Access 28th April 2015. <http://groups.medbiq.org/medbiq/display/VPWG/MedBiquitous+Virtual+Patient+Architecture>

# Purpose

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To support curriculum  
with virtual patients technology  
and provide  
effective teaching and learning strategy  
=  
create a virtual patient



# Methods

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## ▶ DecisionSim™

-  Decision Simulation Platform, LCC (2012, University of Pittsburgh)
- standards-based virtual patient platform for authoring and delivery of branched narrative case

## ▶ Diabetes mellitus type 1

- Pharmaceutical Care - eligible disease
  - patient behaviour directly linked with health outcome
  - any wrong decision may shortly lead to serious negative health consequences
  - patient knowledge and competence is crucial to maintain proper blood glucose level and minimize the risk of complications
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# Methods

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## ▶ Virtual patient case

- target audience: fifth-year undergraduate pharmacy students
- voluntary module: part of mandatory Pharmaceutical Care course
- prerequisite courses: pathophysiology, pharmacokinetics, pharmacology, toxicology, pharmacognosy and epidemiology
- self-directed learning
- scoring:
  - baseline: 100 points
  - optimal decisions do not change the scoring
  - improper decisions: -1/-2/-5/-10/-20 credits based on the severity of the possible consequences of each decision (e. g. -20 for avoidable hospitalization, -5 for unnecessary referral, -2 for dispensing drug that could moderately harm)
- obligatory pharmaceutical care process documentation



# Virtual patient case

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## ▶ Patient description

- 17-years old woman
- known by the pharmacist for several years
- recently diagnosed with diabetes type 1
- insulin therapy prescribed
- her parents and herself feel confused and uncertain about the disease and its treatment, they ask pharmacist for help
- depression diagnosed during the case



# Virtual patient case

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## Diabetes specific problems

insulin therapy rules and therapy effectiveness evaluation

techniques of the insulin administration

blood glucose meter use

modification of therapeutic regimen to control hyper-/hypoglycemia or comorbidities

impact of medications, substances (marijuana) and infections on blood glucose level

development of diabetes monitoring plan

development of patient education plan

patient compliance monitoring

role and options of contraception in diabetes

## Non-diabetes specific problems

mood disorders (depression management, referral)

management of upper respiratory tract infection symptoms

assessment and interpretation of patient's quality of life

analgesic drug choice (aspirin and paracetamol /acetaminophen)

amoxicilline and oral hormonal contraception - the contraceptive effect possibly decreased

therapy costs

off-label use (inhaled formoterol)

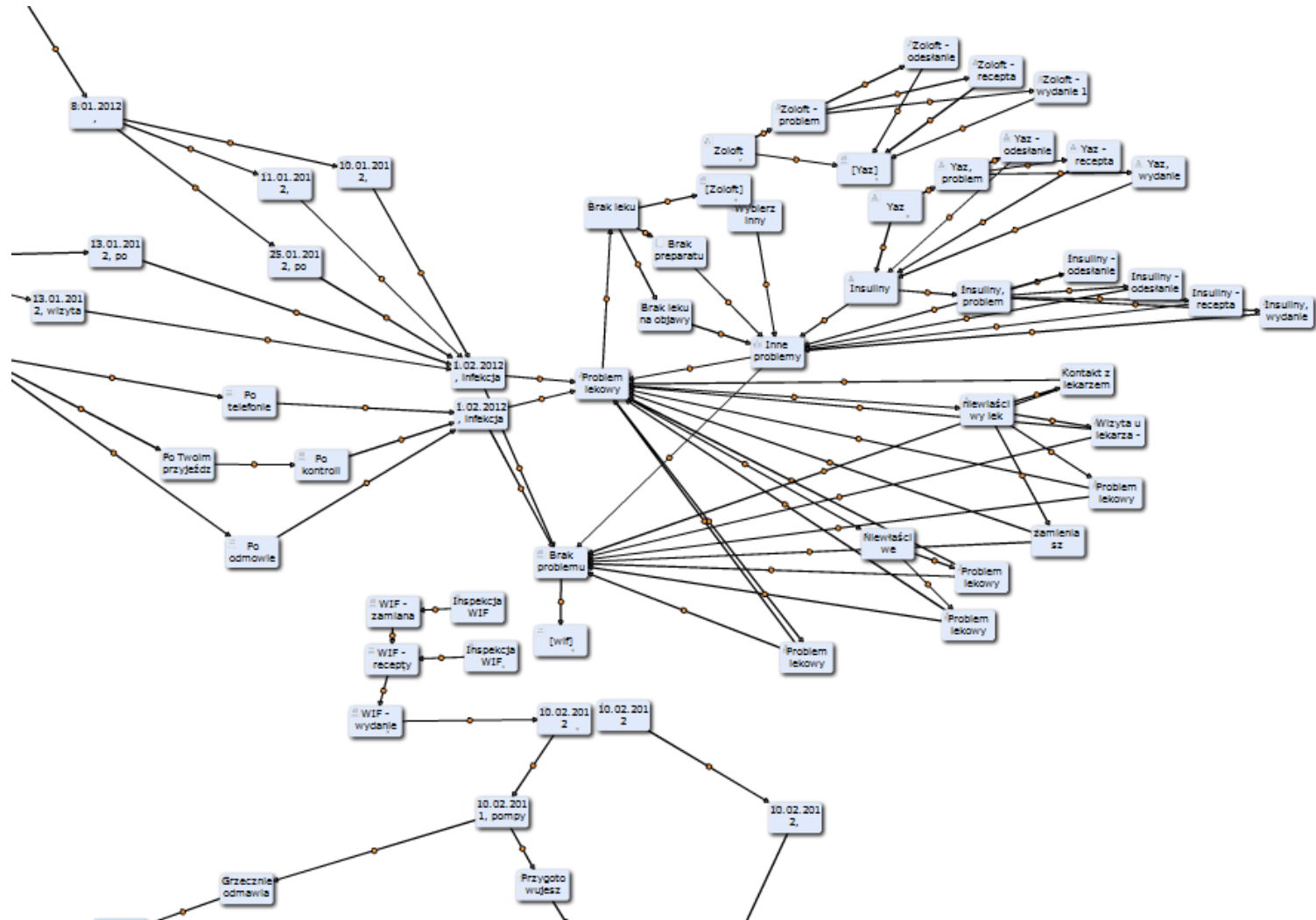
perception of pharmacist's and physician's professional competences

patient's winter holiday apart from home

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# Virtual patient case





# Virtual patient case

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## ▶ Results

- 76 out of 151 students decided to solve the case
- positive perception of the learning/teaching method
- case perceived as challenging
- average students' performance
  - mean scoring was 38 out of 100 credits
  - best student – 78 credits



# Virtual patient case - conclusions

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## ▶ Teacher perspective

- case preparation is time consuming yet the didactic results are worth the work
- software usability influences the teaching experiences

## ▶ Learner perspective

- positive perception despite of significant educational challenge



# Recent situation

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- ▶ virtual patient with diabetes type 1 adopted as mandatory case during Pharmaceutical Care course
- ▶ virtual patient created by the pharmacy students who participated in the experiment (patient suffering from venous thromboembolism)
- ▶ virtual patients used in pre- and post-graduate pharmacy teaching



# Thank you

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