



LIÈGE université

**Center for Interdisciplinary
Research on Medicines**

DEVELOPMENT AND EVALUATION OF A SIMULATION-BASED VACCINATION TRAINING COURSE TARGETING VACCINE HESITANCY FOR PHARMACY STUDENTS

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New pharmaceutical service



COVID-19
pandemic



prophylactic
COVID-19 vaccines by
pharmacists
Law of February 2022



**vaccination
training program**
at University of
Liège

« Law relating to vaccination and the administration, by pharmacists working in pharmaceutical pharmacies open to the public, of vaccines authorized in the context of Covid-19 prophylaxis »



prophylactic
INFLUENZA vaccines by pharmacists
Law of October 2023



Vaccination training program

3 parts :



1. Online:
e-learning



2. **Activities at the
Center for Medical
Simulation**

1/2 day



3. **Activities at the
Educational
Pharmacy**

1/2 day

Legal criteria for training

minimum 8h

Theoretical aspects

- **composition** of vaccines
- **CSS** recommendations
- allergies to certain **components**
- **allergic reactions**

Practical aspects

- sterile **administration**
- recognition of **serious allergic reactions**
- basic **resuscitation** techniques



e-learning

workshops
at the
Simulation
Center

Activities at the Educational Pharmacy

2 parts :

- **Pharmaceutical legislation and ethics** (specificity, regulation, storage, preparation, administration of vaccines, etc.)
- **Vaccination advice** (anti-vax patient, ambivalent patient, convinced patient with eligibility and history)
- Role playing (improvisation) followed by debriefing



Activities at the Center for Medical Simulation

- **Procedural workshops** (preparation, vaccine injection, cardiopulmonary resuscitation)
- **Workshops with simulated patients** (vagal discomfort and anaphylactic shock)



2 studies

2023

**quantitative pre-post design
study**

Master's students in Pharmacy
(n=88)

Results



2024

new mixed-method study

Master's students in Pharmacy
(n=65)

Methodology

Evaluation of simulation-based vaccination training

2023: quantitative pre- and post design study

Questionnaires based on the Kirkpatrick model

Adapted to the pharmaceutical, vaccination and Belgian context

Variables considered:

- training **satisfaction** (level 1)
- **interest** of the training (level 2a)
- **self-confidence** (level 2b)

Items assessed by a **5-point Likert scale** ranging from 0 (totally disagree with the statement) to 4 (totally agree).

Average of the scores of the items constituting them, **reexpressed out of a total of 100**

Evaluation of simulation-based vaccination training

2023: quantitative pre- and post design study

Objective structured clinical evaluation (ECOS)

- **Individual** participation, **4 weeks after** the practical training day, duration = **7 min**
- **Standardized patient** visiting the pharmacy for a **Covid-19 vaccination reminder**
- **Simulation of pharmacy-based vaccination**
 - preparation and injection of the vaccine
 - knowledge regarding identification
 - distinction, and management of adverse effects
- **Analytical checklist** (procedure for vaccine preparation and injection, questions regarding knowledge of adverse effects, and communication during the vaccination procedure)

2023: quantitative pre- and post design study

Table 3.2.1 – Evolution of interest and feeling of confidence between T0 and T1

Variable	T0	T1	Difference	p-value (Wilcoxon)
Public health benefit	87.5 (79.2 - 95.8)	91.7 (79.2 - 100)	0.0 (-4.2 - 8.3)	0.816
Interest in the training in the course	91.7 (83.3 - 100)	100.0 (91.7 - 100)	0.0 (0.0 - 8.3)	0.016
Interest in simulation	85.0 (75.0 - 95.0)	90.0 (80.0 - 100)	0.0 (-10.0 - 15.0)	0.062
Confidence in responding to vaccine hesitancy at the counter	66.7 (56.3 - 72.9)	77.1 (70.8 - 85.4)	12.5 (6.3 - 20.8)	< 0.001
Confidence in preparing and injecting the vaccine	50.0 (12.5 - 75.0)	75.0 (62.5 - 87.5)	25.0 (0.0 - 50.0)	< 0.001
Confidence in managing side effects	45.8 (12.5 - 66.7)	75.0 (70.8 - 87.5)	33.3 (16.7 - 66.7)	< 0.001
Confidence in communicating during the vaccination procedure	56.3 (43.8 - 75.0)	75.0 (65.6 - 84.4)	15.6 (3.1 - 28.1)	< 0.001

2023: quantitative pre- and post design study

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2023: quantitative pre- and post design study

Table 3 – Descriptive statistics OSCE assessment

Variable	Number of students	Median (P25 – P75) / Number (%)
Vaccine preparation	86	75.0 (62,5-87,5)
Vaccine injection	86	88.9 (77.8-88.9)
Knowledge of adverse effect	86	100.0 (100.0-100.0)
Communication during the vaccination procedure	86	100.0 (100.0-100.0)
Total skill score for OSCE station	86	87.93 (79.31-93.10)

Competences

Skills necessary to ensure quality and safety of the vaccination procedure in pharmacies

2023: quantitative pre- and post design study

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Communication during the vaccination procedure	86	100.0 (100.0-100.0)
Total skill score for OSCE station	86	87.55 (79.51-95.10)

Bias

- general communication and politeness during the vaccination procedure
- no communication relating to vaccine hesitancy or relationship with the patient

Areas of improvement

Confidence and skills in communication with patients during vaccination, communication relating to vaccine hesitancy



2024 mixed-method study to address these gaps

2024: mixed-method study

2 same parts: a **theoretical section** and a **practical section**, activities at the ULiège Experimental Pharmacy and the Medical Simulation Center

Assessment of the training's impact on vaccine hesitancy

Quantitative analysis: pre- and post tests using validated perception questionnaires based on the Kirkpatrick model and OSCE to assess:

- training **satisfaction**
- **interest** of the training
- **self-confidence** about **vaccine hesitancy**
- **knowledge** level
- **competencies**

Qualitative analysis: Focus Groups focusing on **vaccine hesitancy**

Focus on vaccine hesitancy

2023

Pharmaceutical legislation and ethics conference (specificity, regulation, storage, preparation, administration of vaccines, etc.)

Vaccination advice role playing (anti-vax patient, ambivalent patient, convinced patient with eligibility and history) and **debriefings**



2024

Integrated activity

- Creation of cases articulated around the themes of **vaccine hesitancy** and **legislation**
 - Unsensitized patients
 - Patients unaware of the benefits
 - Scared patients
- Use of **decision trees** around large profiles
- Emphasis on **debriefing**

Conclusions

	2023	2024
Development of an intervention	<ul style="list-style-type: none"> • Response to the law • Response to the needs of future community pharmacists • Response to health needs: vaccine coverage and reduction of healthcare burden 	<ul style="list-style-type: none"> • Enhancement of the counter communication about vaccine hesitancy • Response to health needs: vaccine coverage and reduction of healthcare burden
	Vaccination act	Vaccine hesitancy
Evaluation of the intervention: Study	<ul style="list-style-type: none"> • interest • satisfaction • gain in self-confidence • skills development <ul style="list-style-type: none"> • vaccination act • knowledge of adverse effects 	<ul style="list-style-type: none"> • interest • satisfaction • gain in self-confidence • skills development <ul style="list-style-type: none"> • vaccination act • communication about vaccine hesitancy



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Thank you



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