

**115632 – WEB-RADR****WEB- Recognising Adverse  
Drug Reactions****WP3B – User Based  
Evaluation****User experiences: Study 4. Assessment of experiences of  
Web-RADR app users**

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## Background

### 1.1 Background

Reporting of adverse drug reactions (ADRs) by patients has been shown to be a valuable addition to the reports provided by healthcare professionals (HCPs) (1,2). However, knowledge in the general population about reporting ADRs e.g. through the Yellow Card Scheme in the UK is limited (1). It is widely accepted that new tools should be developed that facilitate reporting of ADRs by patients and healthcare professionals. Intensive web-based monitoring of patient experiences with new drugs provides one such tool (3,4). A mobile application or a so-called app provides another.

When ADR reports or findings from clinical trials result in the identification of a new and important drug safety signal that information does not always reach the healthcare professional or patient and affect their clinical behaviour (5,6). In the EU, important new safety issues are primarily communicated by sending paper-based warning letters by the Marketing Authorisation Holder (MAH) to healthcare professionals; i.e. Direct Healthcare Professional Communications (DHPCs). DHPCs are increasingly sent in collaboration with the European Medicines Agency (EMA) (7). Although many National Competent Authorities (NCAs) publish these safety-warnings on their website, this is not sufficient to reach all stakeholders as a recent study showed that Dutch physicians rarely visit their NCA website (8). In addition, the European Federation of Pharmaceutical Industries and Associations (EFPIA) is keen to establish new mechanisms and policies for these communications with a view to reducing future costs of harm. This is why additional channels need to be explored through which stakeholders can be informed about drug risks. Ideally, risk communication is two-way and it is for that reason attractive that a tool for reporting ADRs also provides useful information for the user of the tool, such as existing benefit/risk information (9,10). Especially when that source is considered trustworthy, information may be more readily accepted (8,11).

Still, it is largely unknown how the target populations of patients and HCPs value a mobile app for both reporting ADRs and as a source of drug safety information. HCPs may not always have the same needs regarding safety information as lay people (12); more sophisticated language could be used, and/or references to scientific background information could be given (13). Also, large differences can be expected in how much a mobile application will be used between patient groups; e.g. younger patients, highly-informed patients (e.g. those with an orphan diseases, who belong to a powerful patient community) or elderly patients with often multi-morbid disease (e.g. those with heart failure, type II diabetes mellitus). Actually, it has been suggested from the EURORDIS patient platform, to provide wider information about off-label treatments. Due to the relevance of this information for rare disease patients. Format and wording may affect the response to risk information by HCPs (14). User-friendliness, wording and format should be attuned to the target audience not only considering health literacy but possibly also visually-disabled patient populations. Another challenge is how to get a mobile app adopted by the larger public.

In this project, a mobile app to report ADRs **and** to provide ADR information – i.e. two-way risk communication – has been developed. Currently, the app is available for the UK, Croatia and the Netherlands. The names of these apps are respectively YellowCard app, HALMED app, and Bijwerking app. This protocol describes the fourth study (see Figure) conducted by work package (WP) 3B.

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# 1 Rationale

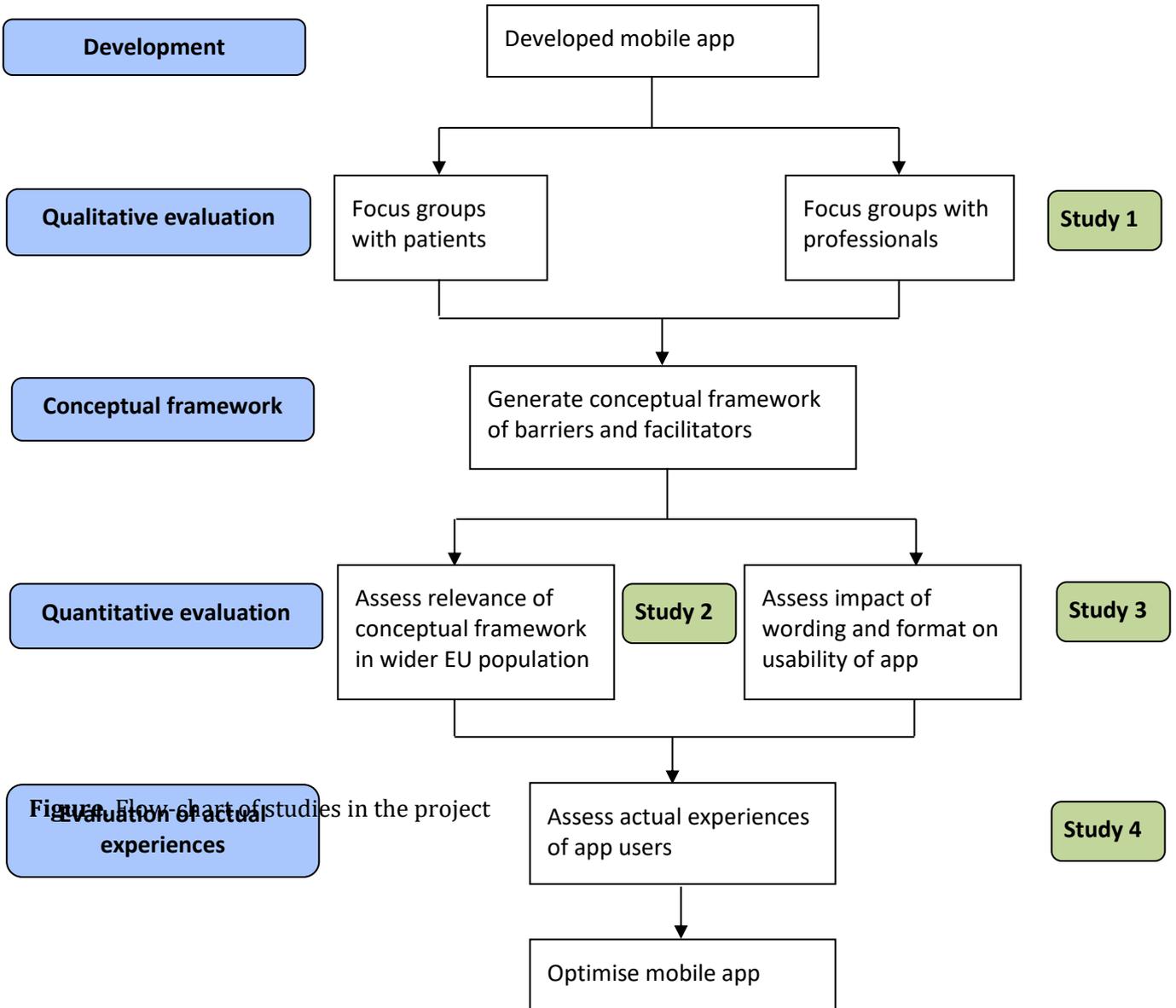
## 1.1 Background

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In this project, a mobile app to report ADRs **and** to provide ADR information – i.e. *two-way risk communication* – has been developed. Currently, the app is available for the UK, Croatia and the Netherlands. The names of these apps are respectively YellowCard app, HALMED app, and Bijwerking app. This protocol describes the fourth study (see Figure) conducted by work package (WP) 3B.



## 2 Responsibilities and coordination

This study is under the responsibility of:

*Study supervisor:*

Peter Mol (University Medical Center Groningen, Dutch Medicines Evaluation Board)

*Study coordinators:*

Sieta de Vries (University Medical Center Groningen)

*Other staff involved:*

Web-RADR WP3A

## 3 Objectives

### 3.1 Primary objectives

The primary objective of this study is:

- to assess the experiences of users of the Web-RADR app and the intention to continue using the app.

#### 3.1.1 Secondary

This study also intends to assess:

- the influence of factors of the Unified Theory of the Acceptance and Use of Technology (UTAUT) on the intention to continue the use of the app;
- whether user characteristics moderate associations between the factors of the UTAUT model and the intention to continue the use of the app;
- whether the intention to continue using the app is associated with actual behaviour.

## 4 General methods

### 4.1 Study design

A cross-sectional study design will be used in which a survey will be distributed among people who registered for the Web-RADR app or use the app (see below).

### 4.2 Participants

Those who registered for the HALMED app of the pharmacovigilance center HALMED in Croatia or the YellowCard app of the Medicines and Health products Regulatory Agency (MHRA) in the UK, will receive an email from the national pharmacovigilance center with the question to complete a survey about the app. Collaborators in the Web-RADR project, and staff from HALMED and MHRA will be excluded from participating in this study. For this, Epidemico's (the company that developed the apps) list of exclusions will be used.

For the Bijwerking app of the Netherlands pharmacovigilance center Lareb, a news item about the survey will be presented in the app to ask users for their participation.

### 4.3 Survey

The email and news item will contain a link to a short (11 items), digital survey to assess the user's experiences. The survey (see Appendix) is based on the Unified Theory of Acceptance and Use of Technology (UTAUT) (15). According to this theory, someone's intention to use technology such as a mobile app is influenced by the following factors: performance expectancy, effort expectancy, social influence and facilitating conditions. The survey contains questions that address these aspects except facilitating conditions since people already downloaded the app indicating that they have the necessary resources (16). In addition, a question about the behavioural intention to continue using the app is included. The items were developed based on previously used surveys (15-18) and are presented as 7-point Likert scale items.

The survey will be available in three languages, that is English, Croatian and Dutch. The Web-RADR partners/colleagues take care of the translations. The English survey will be distributed among users of the YellowCard app. The Croatian survey will be distributed among users of the HALMED app. And the Dutch version will be distributed among users of the Bijwerking app. The email will be sent by the national pharmacovigilance center (i.e. MHRA for the YellowCard app and HALMED for the HALMED app) whereas the news item in the Bijwerking app will be added by Lareb.

On the first page of the survey, responders will be asked the following descriptives, that is their gender, age and whether they use the app as a patient, a HCP or as both. Based on this last question, different versions of the survey will be presented to patients versus HCPs to better fit the population (Appendix).

The following characteristics will be extracted from the registered or user-entered data in the app:

- Experience:
  - How often the app has been opened
  - Date of download (time to completing the survey)
  - Watchlist: Number of medicines added to the watchlist
  - Whether or not an ADR has been reported.

This information will be provided by Epidemico to the national pharmacovigilance centers. Each potential responder will receive a unique code to the digital survey. After data collection, the national pharmacovigilance centers will link the registered data with the survey data. This combined dataset will be provided to the researchers of WP3B. In this case, the data are anonymous to the researchers.

## 4.4 Database management and quality control

Participants will complete the questions in the web-based survey. The entered data will be directly stored in a database. Therefore, no data-entry errors can be made by the researchers. The data will be fully anonymized (removing any reported name and/or e-mailaddress) before the analyses will be conducted.

## 4.5 Demographics

Descriptive statistics will be used to describe the characteristics of the responders. The number of responders will be reported. In addition, the number of responders who started but did not complete the survey will be reported.

## 4.6 Analysis primary objective

The experiences of app users will be presented descriptively for the overall responders and per role, i.e. HCPs and patients. Differences between HCPs and patients regarding Performance expectancy, Effort expectancy, Social influence and Behavioral intention will be tested using t-tests, meaning that the collected data using a 7-point Likert scale will be used as continuous variables.

In addition, the results will be presented per app (HALMED, YellowCard and Bijwerking). Analyses of variance (ANOVA) will be used to test whether there are differences among the apps. Post-hoc analyses will be conducted in case the ANOVA revealed a P-value <0.05.

## 4.7 Analysis of secondary objectives

- Objective: *To assess the influence of factors of UTAUT on the intention to continue the use of the app*

For this objective, a regression analysis will be conducted with the 'intention to continue' as dependent variable/outcome measure. The influence of the following factors of UTAUT will be assessed: Performance expectancy, Effort expectancy and Social influence (while correcting for how long persons already use/have the app). This analysis will be repeated per role (HCPs and Patients) and per app (HALMED, YellowCard, Bijwerking).

- Objective: *To assess whether user characteristics moderate associations between the factors of the UTAUT model and the intention to continue the use of the app*

Moderator analyses will be used to test the moderating effects of the following user characteristics: Gender, age, role (patient vs HCP), and experience. Behavioural intention will be used as dependent variable and the factors of UTAUT as independent variables (each factor in a separate analysis).

- Objective: *To assess whether the intention to continue using the app is associated with actual behaviour*

For this objective, the behavioral intention as reported in the survey will be compared with actual behavior data, that is the number of times the user entered the app in the 3 months after completing the survey through system logs. These actual behavior data will be extracted from Epidemico's database.

## 4.8 Ethical considerations

### 4.8.1 Regulatory and ethical compliance

The WP lead is responsible to ensure regulatory and ethical compliance of this study, in accordance with regulations in place in the countries where the study will be run. The GAB is responsible to ensure ethical adequacy of this protocol and related documents.

#### 4.8.2 Informed consent procedures

Participants can decide whether or not they want to participate by starting the survey. In addition, they can stop answering the survey when they want to. Starting the survey is considered as providing consent to participate in the study. No formal consent form will be included.

#### 4.8.3 IRB/IEC

The protocol will be submitted to the ethics committee of the University Medical Center Groningen to ask for a waiver of full ethical approval.

### 4.9 Timelines

When	What
September 2016	- Finalise study protocol (in collaboration with WP3A) - Finalise questions for the survey
October 2016	- Submit protocol to Ethics committee - Construct web-based survey
November – December 2016	Data collection
January 2017	Data analyses
March 2017	- Data extraction of actual behaviour - Analyses of last secondary objective (association between intention and actual behaviour)
May 2017	Draft version report
November 2017 (month 27)	Final report

## 5 References

Ref No	Citation
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	Cancer Survivors: An Iterative, Multi-Stakeholder Approach. JMIR Res Protoc 2015;4(1):e14
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## 6 Appendix

### English survey

1. What is your age?
2. What is your gender? (male, female, do not want to tell)
3. In what role do you use this app/have you downloaded this app? (healthcare professional, patient or consumer of medicines, both, other namely)

	Totally disagree						Totally agree	Remarks
1. The use of the YellowCard app positively contributes to my knowledge about medicines	<input type="checkbox"/>	Only for patients Performance expectance						
2. The use of the YellowCard app encourages me to report side-effects	<input type="checkbox"/>	Only for patients Performance expectance						
3. The YellowCard app is a valuable app to me	<input type="checkbox"/>	Only for patients Performance expectance						
1. The use of the YellowCard app is useful in my job	<input type="checkbox"/>	Only for HCPs Performance expectance						
2. I can report adverse drug reactions faster with the use of the YellowCard app	<input type="checkbox"/>	Only for HCPs Performance expectance						
3. The use of the YellowCard app encourages me to reports adverse drug reactions	<input type="checkbox"/>	Only for HCPs Performance expectance						
4. The YellowCard app is a valuable addition to other information sources that I use	<input type="checkbox"/>	Only for HCPs Performance expectance						
5. The YellowCard app is well organized	<input type="checkbox"/>	Effort expectancy						
6. The YellowCard app is easy to use	<input type="checkbox"/>	Effort expectancy						
7. The opinion about the YellowCard app of people close to me is important to me	<input type="checkbox"/>	Only for patients Social influence						
7.The opinion about the YellowCard app of other professional is important to me	<input type="checkbox"/>	Only for HCPs Social influence						

8. I intend to keep using the YellowCard app (at least in the next 3 months)	<input type="checkbox"/>	Intention						
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Any other comments, suggestions or feedback that you want to share about the app can be provided here:

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### Dutch survey

1. Wat is uw leeftijd?
2. Wat is uw geslacht? (man, vrouw, wil ik niet zeggen)
3. In welke rol gebruikt u deze app/heeft u deze app gedownload? (Zorgverlener, patient of gebruiker van medicijnen, beide, anders namelijk)

	Helemaal mee oneens	<input type="checkbox"/>	Helemaal mee eens	Opmerkingen				
1. Het gebruik van de Bijwerking app draagt positief bij aan mijn kennis over medicijnen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Alleen voor patiënten Performance expectance
2. Het gebruik van de Bijwerking app stimuleert mij bijwerkingen te melden	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Alleen voor patiënten Performance expectance
3. De Bijwerking app is voor mij een waardevolle app	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Alleen voor patiënten Performance expectance
1. Het gebruik van de Bijwerking app is nuttig voor mijn werk	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Alleen voor professionals Performance expectance
2. Met de Bijwerking app kan ik sneller bijwerkingen melden	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Alleen voor professionals Performance expectance
3. Het gebruik van de Bijwerking app stimuleert mij bijwerkingen te melden	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Alleen voor professionals Performance expectance
4. De Bijwerking app is een waardevolle aanvulling op andere informatiebronnen die ik gebruik	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Alleen voor professionals Performance expectance
5. De Bijwerking app is overzichtelijk	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Effort expectancy
6. De Bijwerking app is makkelijk te gebruiken	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Effort expectancy
7. Ik hecht veel waarde aan de	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Alleen voor

mening van de mensen in mijn directe omgeving over de Bijwerking app									patiënten Social influence
7. Ik hecht veel waarde aan de mening van andere professionals over de Bijwerking app	<input type="checkbox"/>	Alleen voor HCPs Social influence							
8. Ik ben van plan de Bijwerking app te blijven gebruiken (in ieder geval de komende 3 maanden)	<input type="checkbox"/>	Intention							

Andere opmerkingen, suggesties of feedback over de app die u wilt delen kunt u hier noemen:

**Croatian survey: to be developed**