

## **Barriers and facilitators in using a Clinical Decision Support System in Falls Clinics for Older People: a European Survey**

European Geriatric Medicine

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On behalf of the European Geriatric Medicine Society (EuGMS) Task and Finish group on Fall-Risk Increasing Drugs (FRIDs)

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### **Supplement 2: Survey, English version**

#### **Physicians' opinion on a Clinical Decision Support System (CDSS) to estimate individual medication-related falls risk: International survey**

Dear Colleague,

Thank you for considering taking part in this online survey.

In people aged 65 years and over, falls-related injuries are one of the main reasons for hospital emergency department attendances, acute hospital admissions and subsequent transfer to nursing-home care. A fall is defined as unexpected event in which the patient comes to rest on the ground, floor or lower level. Falls are a significant public health priority due to their frequent occurrence, related injuries and associated decreased quality of life and economic burden.

After mobility impairment, medication is the second most major cause of falls. However, recent studies have shown that doctors struggle to withdraw Falls-Risk Increasing Drugs (FRIDs) in clinical practice. This survey is part of a larger project which aims to develop and implement a Clinical Decision Support System (CDSS). This

CDSS will help you to estimate the medication-related falls risk associated with individual drugs in the patient's medication regime. The CDSS will combine patients' personalized risk information with safer medication alternatives for FRIDs. In so doing, it aims to aid health care providers in the decision-making process on FRID withdrawal.

With the help of this questionnaire we would like to explore:

- the current practice of medication review in patients who have suffered a fall
- your needs and preferences regarding a CDSS system
- factors that could affect the CDSS implementation

This survey will take approximately 10 to 15 minutes.

This questionnaire is intended to be completed by Physicians (GPs and Hospital Specialists) and other health care professionals who see in their clinical practice older adults ( $\geq 65$  years) who are at risk of falls.

This survey will be conducted in 12 European countries. The coordinating centre for the study is the Geriatric Medicine Department of the Academic Medical Centre in Amsterdam.

The survey was approved by the Medical Ethics Committee of the Academic Medical Centre and is performed under the responsibility of the Academic Medical Centre in Amsterdam. You are therefore guaranteed that:

1. Your personal information and data will be processed anonymously and will not be distributed to third parties.
2. Participation is voluntary, meaning that you can withdraw from participation at any time during or after the survey without providing any reason.

We hope that we have given you sufficient information about the survey in this letter. However, in case you have any remarks or complaints about the process used/ or procedure followed, please contact the local Representative for this study: Yvonne Morrissey, Department of Health Care of Older People, Kent and Canterbury Hospital, Ethelbert Road, Canterbury, CT1 3NG. Telephone No 01227 766877 Extension 722 4208

We look forward to your participation in this survey.

Yours sincerely,

Dr. Yvonne Morrissey  
Kim Ploegmakers, MSc  
Dr. Annemiek Linn  
Dr. Nathalie van de Velde  
Prof. Julia van Weert

Before proceeding please confirm that you have read the Informed Consent form on the previous page and tick the box if you agree with these terms.

I have read and understood the information on the previous page about the "Physicians' opinion on a Clinical Decision Support System (CDSS) to estimate individual medication-related falls risk: International survey" and I am willing to participate in this survey.

Yes

No → Unfortunately you cannot participate in this online survey if you do not give Informed Consent

### **Demographics**

1. In which country do you live?
  - Belgium
  - Czech Republic
  - Denmark
  - Spain

- France
- Ireland
- Italy
- Malta
- The Netherlands
- Austria
- Poland
- Finland
- Sweden
- Turkey
- United Kingdom

2. What is your age?

3. What is your gender?

- Male
- Female

4. What is your medical specialty?

- General practitioner
- Geriatrician – Hospital-based
- Geriatrician – Community-based/ working in Care Home Sector
- Specialist, Internal Medicine
- Geriatric Medicine Specialist Registrar/Trainee
- Internal Medicine Specialist Registrar/Trainee
- GP trainee
- Other, please specify your specialty:

5. How many years of experience do you have in practicing medicine?

### Fall Assessment

The following questions will give us insight into how often you see older adults ( $\geq 65$  years) in your clinical practice who are at risk for drug-related falls and how often you perform a medication review. When speaking of a fall, we mean a fall as defined by PROFANE: “an unexpected event in which the patient comes to rest on the ground, floor or lower level”. A fall can occur with or without sustaining injury.

1. On average, how often do you see older patients ( $\geq 65$  years) that have experienced a fall?

- Daily
- Weekly
- Monthly
- Once every three months
- Few times per year
- Never → unfortunately, you cannot participate in this survey. Only physicians who see patients at risk of falls can participate.

2. Do you ask every patient ( $\geq 65$  years) you see in your clinic if **they have fallen in the past year**?

- I ask all my patients → go to question 3, skip question 4 & 5
- I ask most of my patients → go to question 3 & 4, skip question 5

- I do not routinely ask about falls but if symptomatology or other aspects of patient's history indicates falls risk → go to 3 & 5, skip question 4
- I never ask my patients → go to question 4, skip question 5

3. Do you distinguish between single and multiple falls in the past year?

- Yes
- No

4. In what situation do you not ask **all** your patients (≥ 65 years) if they have fallen in the past year? (Multiple boxes can be checked)

- I don't ask if I believe it is not relevant
- I don't ask if I do not have enough time
- I don't ask healthy older adults
- I don't ask patients who have other medical problems
- I did not know I had to assess every patient on a fall event
- Other, please write any other reason in the box below:

5. According to you, in which situation is it necessary to ask an older patient if he/she has fallen in the past year? (Multiple boxes can be checked)

- When there was a previous fall event within the last year
- If there are symptoms which can be associated with increased risk of falls e.g. dizziness
- If there are one or multiple drugs which can increase falls risk
- If the level of frailty is high
- When a patient brings it up
- Other, please write any other reason in the box below:

6. Did you know that certain medication classes are associated with an increased fall risk?

- Yes
- No → go to 8

7. Below you will find a list of several medication classes. Some of these classes are associated with an increased risk of falls, others don't increase falls risk. Could you indicate for each medication class if this class is associated with an increased falls risk.

	Yes	No
Antihypertensives	<input type="checkbox"/>	<input type="checkbox"/>
Diuretics	<input type="checkbox"/>	<input type="checkbox"/>
Antiarrhythmics	<input type="checkbox"/>	<input type="checkbox"/>
Cardiac vasodilators	<input type="checkbox"/>	<input type="checkbox"/>
Benzodiazepines	<input type="checkbox"/>	<input type="checkbox"/>
Antidepressants	<input type="checkbox"/>	<input type="checkbox"/>
Antipsychotics	<input type="checkbox"/>	<input type="checkbox"/>

Antiepileptic medication	<input type="checkbox"/>	<input type="checkbox"/>
Anti-Parkinsonian medication	<input type="checkbox"/>	<input type="checkbox"/>
Anticholinesterases (anti-dementia drugs)	<input type="checkbox"/>	<input type="checkbox"/>
Antivertigo medication	<input type="checkbox"/>	<input type="checkbox"/>
Opioids	<input type="checkbox"/>	<input type="checkbox"/>
Anticholinergic medication	<input type="checkbox"/>	<input type="checkbox"/>
Blood glucose lowering agents	<input type="checkbox"/>	<input type="checkbox"/>
Laxatives	<input type="checkbox"/>	<input type="checkbox"/>
Proton pump inhibitors	<input type="checkbox"/>	<input type="checkbox"/>
Antihistamines	<input type="checkbox"/>	<input type="checkbox"/>

8. When you assess a patient who has experienced a fall **with or without** a fall-related injury, how often do you perform a **medication review** (Medication review is a structured evaluation of patient's medicines with the aim of optimizing medicines use and improving health outcomes. This entails detecting drug related problems and recommending interventions)?

- Always → go to question 10
- Often → go to question 10
- Sometimes → go to question 10
- Seldom → go to question 10
- Never

9. Why might you not perform medication review in the assessment of a patient who has experienced a fall **with or without** a fall-related injury? (Multiple boxes can be checked)

- If there is a clear cause for the fall which is not drug-related, I decide not to perform a medication review
- I have insufficient knowledge about how to perform a medication review
- There is insufficient information available during the consultation to review the patient's medications (e.g. patient does not know what medications they are on, patient did not bring their medications list to the consultation, there is no information on the patient's referral letter about their medications )
- I refer patients to another health care practitioner for a medication review
- I do not have enough time to perform a medication assessment
- I do not believe it necessary to perform a medication review
- I am not aware of possible medication interactions that cause fall
- I am not aware of medication that can cause a falls
- Other, please write any other reason in the box below

10. When you perform a medication review after seeing a faller, how often do you lower the dosage of a medication or withdraw medication?

- Always
- Often
- Sometimes
- Seldom
- Never
- Not applicable, I never perform a medication review

11. Would you like to receive support with performing a medication review?

- Yes
- Maybe

No

### **Clinical decision support system (CDSS)**

The next questions will assess your experience with a Clinical Decision Support system (CDSS) and your willingness to work with a CDSS.

A frequently used definition of a Clinical Decision Support system is the definition of Robert Hayward of the Centre for Health Evidence: "Clinical Decision Support Systems link health observations with health knowledge to influence health choices by clinicians for improved health care". A CDSS can be used in all kinds of medical fields and for a broad variety of medical problems.

1. In your daily practice, do you use a digital patient medical record or a paper patient medical record?  
 Digital patient medical record  
 Paper patient medical record
2. In your daily practice, do you prescribe medication digitally or handwritten?  
 Digital prescriptions  
 Handwritten prescriptions
3. Have you ever used or worked with a Clinical Decision Support System (CDSS)?  
 Yes  
 No  
 I am not sure

Please do continue with the survey even if you don't have any experience with computerized advice on medication prescriptions and/or CDSS or if you are prescribing by hand instead of digitally.

Our CDSS will give you a personalized estimate of a patient's falls-risk per medication class. These estimates will be produced by a prediction model (A prediction model is a mathematical equation that estimates the risk of an event (e.g. falling) based on patient data (e.g. age, gender, medication use)). Besides the falls risk, the CDSS will give you advice on treatment options. This may be advice to lower dosage, to stop certain medications or to switch to a safer alternative. The CDSS should stimulate doctors to evaluate patient's medication-related falls-risk by performing a medication review in older fallers, help doctors in their decision to continue, change or withdraw falls-risk increasing drugs and so decrease the falls risk of older patients.

4. Based on this description, would you use our system?  
 Yes  
 No  
 Maybe
5. When would you wish to use the described CDSS? (multiple boxes can be checked)  
 Prior to consultation, when I prepare myself for the consultation  
 During my consultation, when I perform the medication review  
 During my consultation, when I provide the patient with medication advice  
 Other, please write any other reason in the box below:

### **Barriers and facilitators**

Previous studies demonstrated certain barriers that might put you off using a CDSS and certain facilitators that stimulate you to use a CDSS. We want to know to what extent these barriers and facilitators apply to your personal situation.

1. Below you will find different barriers that might put you off using the CDSS. Please select up to a maximum of **eight barriers** that apply to you most.

I consider it a barrier to using the CDSS:

- If the privacy and security of the medical data is not guaranteed
- If there are any legal issues
- If the CDSS affects my decision-making autonomy
- If alerts interrupt my workflow
- If I have to add patient data into the CDSS
- If the CDSS doesn't give clinically relevant alerts
- If the advice given by the CDSS is not clear and understandable
- If the CDSS gives a high frequency of alerts
- If the CDSS repeatedly gives the same alert
- If I have to indicate a reason, every time I wish to override an alert
- If the CDSS has a lot of technical issues
- If implementing the CDSS is very costly
- If the CDSS is only available online
- If a piece of advice is given and I'm not able to adopt that advice immediately with one mouse click (e.g. CDSS proposed dosage reduction; dosage can be reduced immediately with one "click")
- When I use the CDSS and I'm not able to look up additional information on demand
- I think my lack of motivation may be a factor affecting the likelihood of me using the CDSS
- I think my resistance to change may be a factor affecting the likelihood of me using the CDSS

2. Are there other factors that would put you off using the CDSS that we didn't mention above? Please fill in the box below:

3. Below you will find different facilitators that might encourage use of the CDSS. Please select a maximum of **eight facilitators** that apply to you most.

It is more likely that I will use the CDSS:

- If the CDSS is customized to my wishes and needs
- If the CDSS is beneficial to patient care
- If the CDSS makes me work more efficiently
- If the CDSS is easily accessible
- If the CDSS is easy to use
- If it is easy to learn how to work with the CDSS
- If I receive training on how to use the CDSS

- If I receive technical support when needed
- If the CDSS fits in my workflow (e.g. gives the right advice at the right time and the right location in the medical record), it is more likely that I will use the CDSS
- If I deem the estimated falls- risk to be accurate
- If I feel supported in my clinical decision-making by the CDSS
- If I can personalize the alerts
- If using the CDSS is recommended by colleagues
- If the hospital management team /board supports the use of the CDSS
- If my colleagues in my department use the CDSS

4. Are there other factors that make you more likely to use the CDSS that we didn't mention above? Please fill in box below:

Thank you for your participation in this online survey.