DISEASES/MEDICINAL DRUGS AND DRIVING

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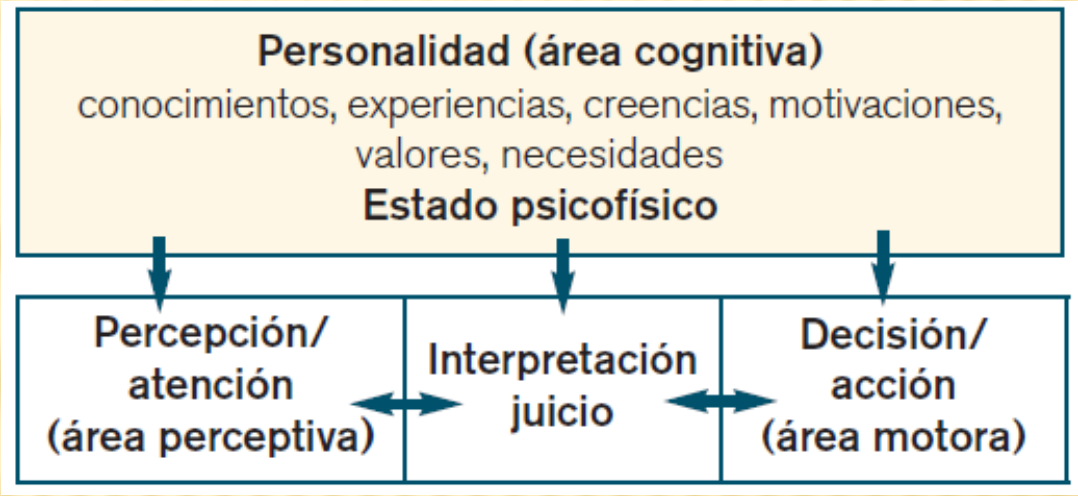
WG on Preventive Activities SEMERGEN

- ***Latent risks*** in the frequent diseases of drivers
- ***Manifiest risks*** when medicinal drugs are taken
- ***Emerging patterns*** for risk control

Safe driving.
Areas involved in driving

Different interactions between areas and levels



The three levels of activity: cognitive, perceptive and motor that can be altered by diseases and the consumption of medicinal drugs

Diseases that affect safe driving

- **Eye diseases**
- **Hearing diseases**
- **Musculoskeletal diseases**
- **Cardiovascular diseases**
  - Arrhythmias
  - Syncope
  - Ischemic heart disease
  - Heart failure
  - HTA

Diseases that affect safe driving

- **Respiratory diseases**
  - **Dyspnea**
  - **OSAS**
- **Endocrine diseases**
  - **Diabetes**
- **Diseases of the nervous systems**
- **Blood diseases**
  - **Tumours**
  - **Blood cell deficiency**
  - **Nacos?**
- **Kidney disease**

MANIFEST RISKS WHEN MEDICINAL DRUGS ARE TAKEN

Medicinal Drugs and Driving

Some data on road safety

- 5% of Road Accidents are related to consumption medicinal drugs.
- 25% of drugs sold in our country can affect vehicle driving.
- In Spain almost 30% of drivers are on prescribed medicines.
- 25-30% of the driving population self-medicate.
- In most cases, the patient is unaware of the potential risk of the treatment on driving and has not received any specific information about this from the healthcare professionals.

Medicinal Drugs and Driving

How they intefere with driving

- Due to their therapeutic action.
- Due to their side effects.
- Due to their pharmacological interaction.
- Due to the way they interact with alcohol

Medicinal Drugs and Driving

Type of prescription drug effects on driving ability

- **Sedative effect:** drowsiness, decreased alertness…
- **Stimulating effect:** muscle spasms, dizziness, insomnia, nervousness, irritability, tremor, tachycardia, mental confusion, psychotic reactions, agitation…
- **Anticholinergic effect:** headache, dizziness, blurred vision…
- **Neuropsychiatric effect:** anxiety, confusion, depression, hallucination, psychosis, seizures, altered behaviour.
- **Extrapyramidal effects and lack of psychomotor coordination:** muscle spasms, agitation, convulsions, lack of motor coordination.
- **Circulatory effects:** arrhythmias, hypotension, cardiac arrest…
- **Metabolic effects:** hypoglycaemia.
- **Auditory effects:** buzzing, tinnitus, hearing loss…
- **Ophthalmologic effects:** blurred vision, accommodation disorder, transient syopia…

PDS Pharmacoepidemiology & Drug Safety

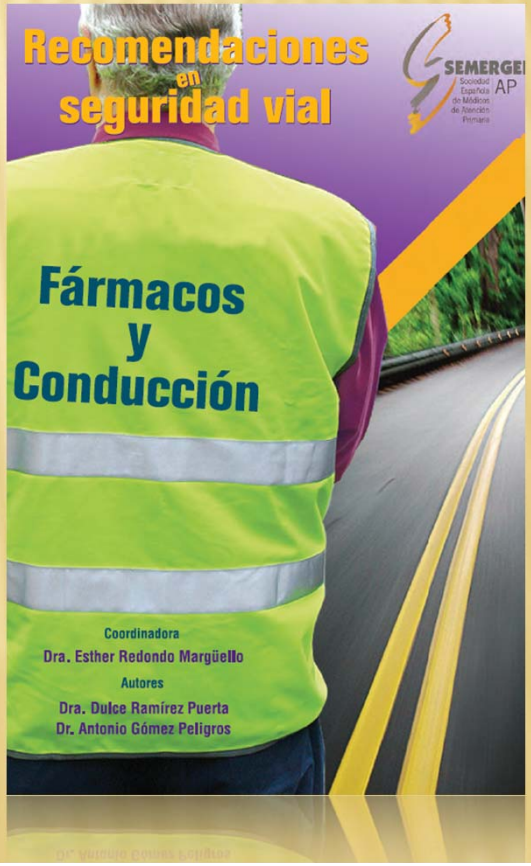
The impact of medicinal drugs on traffic safety: a systematic review of epidemiological studies†

Ludivine Orriols MSc[1]*, Louis-Rachid Salmi MD, PhD[1], Pierre Philip MD, PhD[2], Nicholas Moore MD, PhD[3], Bernard Delorme MD, PhD[4], Anne Castot MD[4] and Emmanuel Lagarde PhD[1]

KEY POINTS

- Taking benzodiazepines has been identified as a risk for road traffic crashes in several epidemiological studies. However, data are missing for other medicinal drugs.
- Main methodological issues are confounding by indication and grouping of drugs with different properties.
- Exposure assessment methods are heterogeneous, partly explaining the inconsistent literature results.

GUIDELINES FOR RISK CONTROL



Physicians when prescribing/giving medicinal drugs to driver patients

- **Report driving habits in the medical history.**
- **Note if driving is not recommended or if IT is required**
- **Assess all the medicines a patient is taking.**
- **Prescribe the most effective and safe medicine.**
- **Prescribe medicines that have less effect on driving.**
- **Recommend the route of administration with the lowest systemic effects.**

Physicians when prescribing/giving medicinal drugs to driver patients

Tips to reduce road risk attributable to the effects of medicines

- Inform the patient of any potential adverse effects of medicines.
- When do adverse effects occur?
- Read the prospectus.
- Avoid self-medication.
- Never use alcohol/medicines when driving.

Categorization of medicines in association with driving (DRUID project)

http://www.druid-project. eu/

DRUID: Driving Under the Influence of Drugs, Alcohol and Medicines

- European categorization proposal for the classification of drugs according to their effects on fitness to drive.
- Purpose: improving prescription/dispensing procedures of medicines that affect driving and serving as an instrument for patients to know the role of medicines in road safety.

Ravera S, Monteiro SP, de Gier JJ, van der Linden T, Gómez-Talegón T, Alvarez FJ; DRUID Project WP4 Partners. A European approach to categorizing medicines for fitness to drive: outcomes of the DRUID project. Br J Clin Pharmacol 2012;74:920-31.

European Commission. Enterprise and Industry Directorate-General. A guideline on characteristics (SmPC) 2009 [online]. Disponible en: http://ec.europa.eu/health/files/eudralex/vol-2/c/smpc_guideline_rev2_en.pdf y en: http://ec.europa.eu/health/documents/eudralex/vol-2/index_en.htm

Categorization of medicines in association with driving (DRUID project)

Category 0: no or insignificant effect

Does not or is unlikely to produce effects on fitness to drive.

Category I I: moderate effect

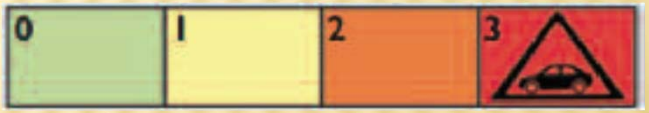
Moderate effects on fitness to drive.

Categoría I: influencia menor

Minimal effects on fitness to drive.

Category III: greater effect

Severe effects on fitness to drive or can be potentially dangerous.



Driving pictogram and its inclusion on medicine containers

Current Spanish model

Pictogram model proposed (DRUID)

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Prescription Medicines and the Risk of Road Traffic Crashes: A French Registry-Based Study

Ludivine Orriols[1]*, Bernard Delorme[2], Blandine Gadegbeku[3,4], Aurore Tricotel[2], Benjamin Contrand[1], Bernard Laumon[3,4], Louis-Rachid Salmi[1,5], Emmanuel Lagarde[1], on behalf of the CESIR research group[¶]

Medicine Level	Exposed Drivers	OR [95% CI][a]	Exposed Drivers[b]	OR [95% CI][c]	OR [95% CI][d]
Level 0	15,715	0.92 [0.88–0.95]***	13,702	0.92 [0.88–0.97]*	0.92 [0.88–0.97]**
Level 1	7,415	0.96 [0.92–1.01]	6,478	0.96 [0.90–1.02]	0.95 [0.89–1.01]
Level 2	8,268	1.24 [1.19–1.30]***	7,102	1.31 [1.24–1.40]***	1.30 [1.22–1.38]***
Level 3	1,982	1.56 [1.42–1.71]***	1,679	1.25 [1.12–1.40]***	1.24 [1.11–1.39]**

Reference group, drivers not exposed to medicines of the risk level considered.
[a]Crude ORs.
[b]Model computed for the 62,766 drivers with no missing values for the adjustment variables.
[c]ORs adjusted for age, gender, socioeconomic category, year, month, day of week, time of day, location, vehicle type, alcohol level, injury severity and other level medicines.
[d]ORs adjusted for age, gender, socioeconomic category, year, month, day of week, time of day, location, vehicle type, alcohol level, injury severity, long-term chronic diseases, and other level medicines.
*$p<0.01$.
**$p<0.001$.
***$p<0.0001$.
doi:10.1371/journal.pmed.1000366.t004

IDEAS TO REMEMBER

- The driving implications of many diseases, mean that healthcare professionals can play a relevant role in improving road safety.
- Proper use of medicinal drugs significantly reduces accidents.
- The existence of a single European system for coding the effect of medicines on driving ability would help with the educational work of healthcare professionals.