

# Prescribing and monitoring errors in primary care

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# Background

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- Prescribing errors an important cause of morbidity and mortality
- However, few large-scale studies in primary care to assess the size of the problem.
- In 2009, the UK's General Medical Council published a report on prescribing errors in hospitals.
- In 2010-11 our team was funded by the General Medical Council to do a complimentary study in primary care.

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DOWN THE DRAIN**

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# 1 IN 6 PATIENTS AT RISK FROM GP BLUNDERS

## Stressed doctors giving out wrong prescriptions

By **Jo Willey** Health Correspondent

**MILLIONS of patients are being put at risk by overworked GPs handing out incorrect prescriptions.**

One in six patients is in danger, according to a damning new report. Family doctors are often too busy or get distracted and interrupted during consultations.

Some patients have to go to hospital or are left seriously ill after taking the wrong medication. Errors uncovered in the major study into GP prescribing in England range from people

being given an incorrect dose to being told to take medicine at the wrong time.

Patients were prescribed drugs which reacted badly with pills they were already taking, while others were not properly monitored with blood tests when on certain medication.

Katherine Murphy, chief executive of the Patients Association, said: "It is deeply worrying that such dangerous mistakes are being

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Arts page 27

# The Daily Telegraph

Wednesday, May 2, 2012

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## Lethal errors in 2m prescriptions

Doctors are making mistakes in drugs given to one in five patients, with elderly worst affected, says GMC

By Rebecca Smith, Medical Editor

FAMILY doctors are giving out almost two million prescriptions a year containing potentially life-threatening errors, the General Medical Council warns today.

One in five patients is receiving drugs from GPs with mistakes including wrong dosage, incorrect instructions or inadequate monitoring, the doctors' regulator finds.

Most of the serious errors related to the blood-thinning drug warfarin, which researchers said could have "catastrophic" consequences if not properly monitored.

Elderly people and young children are twice as likely to be given a prescription with an error, the GMC study into pre-

scribing errors shows. The study found evidence that GPs are signing prescriptions without seeing patients, issuing repeat prescriptions without questions and failing to adjust drug dosages following new tests.

Serious errors uncovered include a 62-year-old woman with an allergy to penicillin who was prescribed flucloxacillin, a similar drug, and elderly patients prescribed warfarin, who should have been closely monitored but who were not tested for two years.

Moderate errors included a four-year-old girl with a stomach upset who was prescribed a drug that should be used "with caution" in children. Minor mistakes included a one-year-old girl who

was given two prescriptions for antibiotics in the same consultation but with different doses stipulated.

Pharmacists investigated the records of 1,700 patients in 15 practices over a 12-month period. One in five patients had been given a prescription with an error. This rose to four in ten of the over-75s. Each extra medicine a person was on increased the risk of errors by 16 per cent.

Among 6,000 prescriptions examined, one in 550 had a severe error. Extrapolated across England, where 900 million prescriptions are issued annually, it would mean 45 million prescriptions contain errors, with 1.8 million classed as severe.

Failing to request that the patient be monitored was the most common serious

error followed by prescribing a drug to which the patient was allergic. Almost all serious errors involved warfarin, which has been used as rat poison. It is prescribed to thin the blood in people at risk of blood clots. It must be carefully monitored because it interacts with other drugs and some foods and poses a risk of life-threatening stomach bleeds. In one case, an elderly woman was admitted to hospital with a bleed two weeks after being prescribed warfarin.

Human error was behind most mistakes, the study says. GPs have blamed rushed appointments and complex computer software that makes it easy to select the wrong drug or incorrect dose. They also said nurses sometimes interrupted

them during clinics, which led to errors.

Professor Tony Avery, of Nottingham University, who led the research, said the mistakes could have catastrophic consequences. Referring to the prescribing of warfarin, he said: "It really is an extremely unsafe situation. Bleeds can be catastrophic, they are potentially fatal."

Prof Avery, who is also a GP, called for family doctors to increase their appointment times from the average 13 minutes to 15. He also called for better training and for pharmacists and GP receptionists to carry out medicine reviews and check monitoring arrangements.

Professor Sir Peter Rubin, chairman of the General Medical Council, said GPs had to give prescribing priority. He said

effective computer systems and greater involvement from pharmacists could minimise errors.

Martin Astbury, president of the Royal Pharmaceutical Society, said: "The number of mistakes could be reduced by up to 50 per cent if GPs introduced an in-house pharmacist-led support scheme."

Andrew Lansley, the Health Secretary, said the vast majority of prescriptions were checked and corrected by pharmacists. "Patients can be confident that the medicines they receive are safe and appropriate," he said.

Dr Clare Gerada, of the Royal College of GPs, said that of one million daily consultations, "in 95 per cent of cases I prescribe safely and effectively".

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# ● ● ● | Aim

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To determine the prevalence, nature and causes of prescribing and monitoring errors in general practice

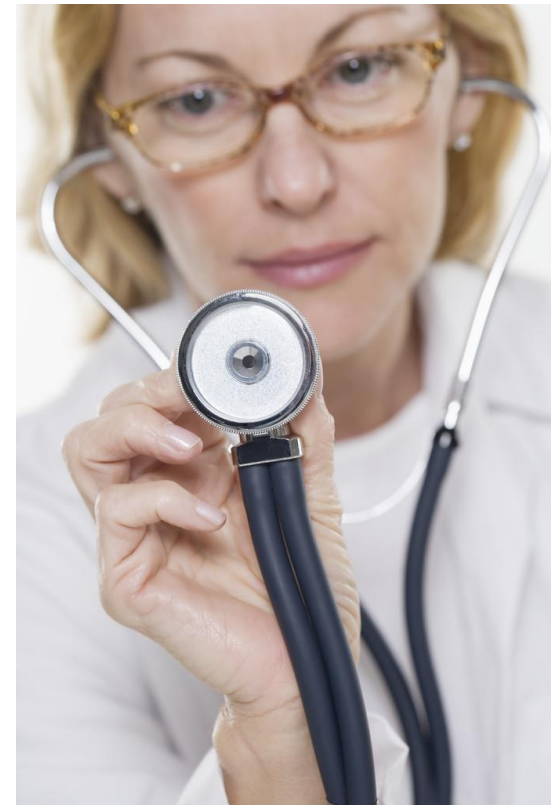




# The UK system

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- Each person registered with a local doctors' practice (general practitioner "GP")
- A GP referral is needed to access most secondary care services (no direct access to specialists)
- Routine medication prescribed by the GP, but some specialist and "hospital only" medication prescribed by clinic / hospital





# Methods

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## Quantitative

- Retrospective review of medication items prescribed over a 12 month period to 2% sample of patients from 15 general practices
- Descriptive and multivariable analysis of factors associated with error.

## Qualitative

- Interviews with 34 prescribers regarding 70 potential errors
- 15 Root cause analyses of potential errors
- 6 focus groups with staff in General practice



# Prescribing error definition

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“A prescribing error occurs when, as a result of a prescribing decision or prescription-writing process, there is an unintentional, significant:  
Reduction in the probability of treatment being timely and effective  
**or**  
Increase in the risk of harm when compared to generally accepted practice.”

Dean et al (2002)



# Monitoring error definition

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“A monitoring error occurs when a prescribed medicine is not monitored in the way which would be considered acceptable in routine general practice. It includes the absence of tests being carried out at the frequency listed in the criteria, with tolerance of +50%. If a patient refused to give consent for a test, then this would not constitute an error”.

Barber et al (2009)



# Identification of errors

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- Research pharmacists reviewed all prescriptions to identify “potential errors”

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- Multidisciplinary panel discussed each potential error

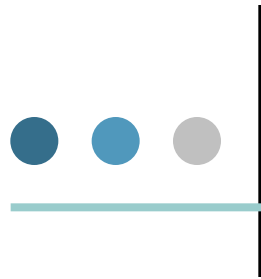
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- Classified as prescribing error, monitoring error, “sub-optimal prescribing”, or legal problem



# Characteristics of patients

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- Random sample of 1,777 patients.
- Mean age of 39.3 years (standard deviation: 22.7 years)
  - similar age distribution to the English population
- 884 (49.8%) were female



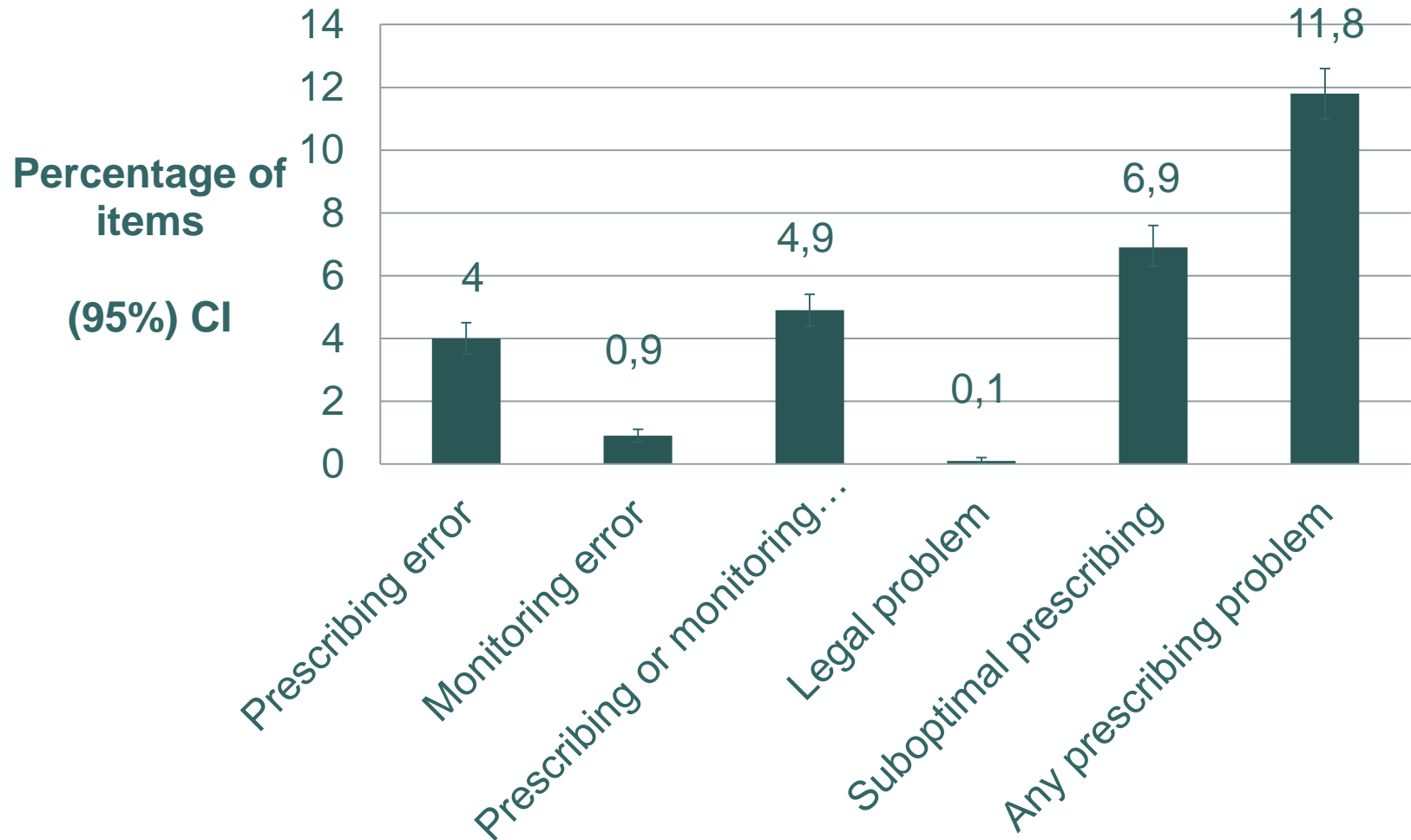
# Results

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- 6,048 unique prescription items were reviewed involving 1,200 (67.5%) patients.
- The prevalence of prescribing or monitoring errors was 4.9% (95% CI: 4.4%-5.4%).
- The vast majority of the errors were of mild to moderate severity.
- 1 in 550 items associated with a severe error.



# Prevalence of error





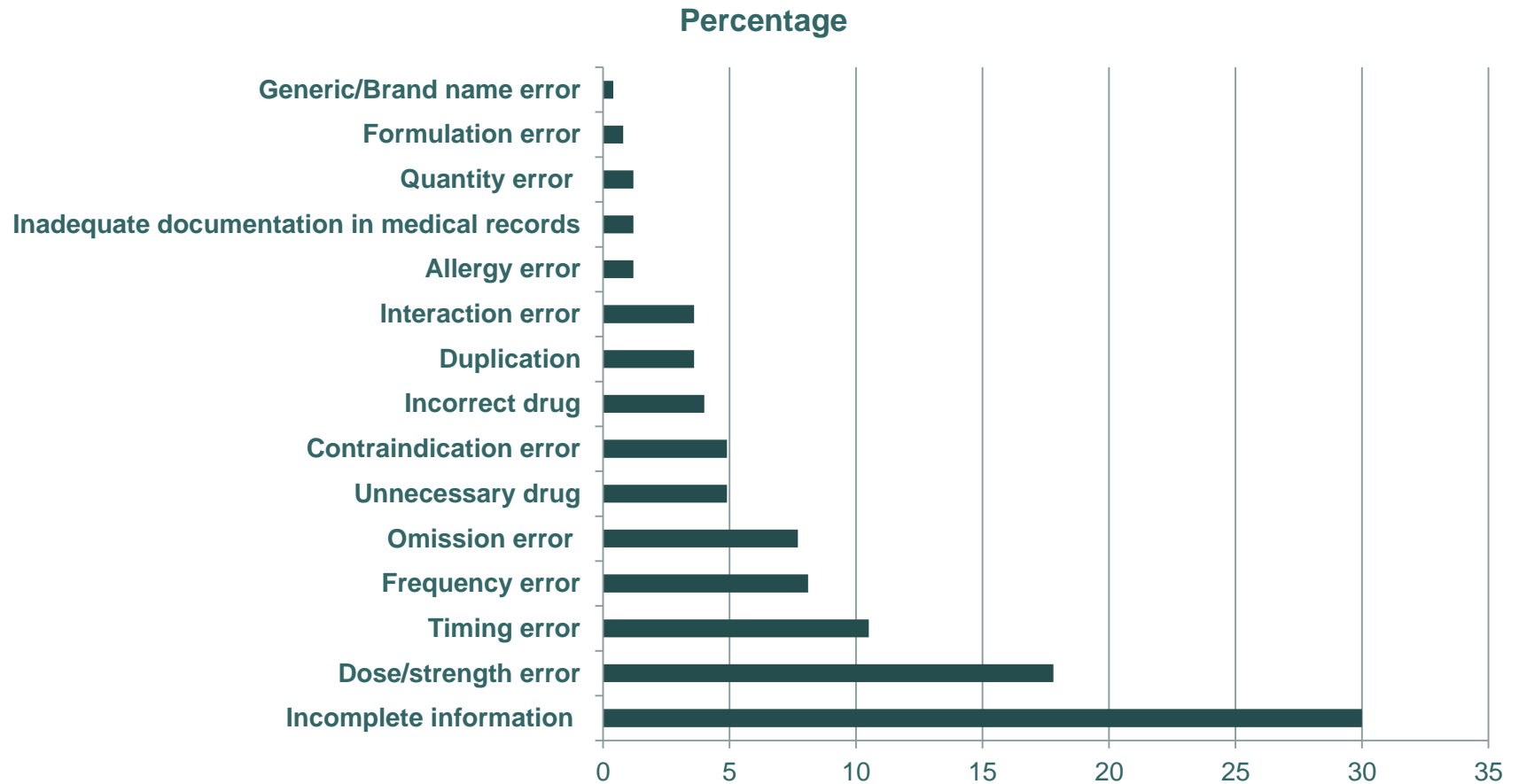
# Error rates for different patients

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Patient Group	Prevalence
All patients (n=1,777)	12% (95% CI 10.5%-13.6%)
Patients who received at least one medication (n=1,200)	17.8% (95% CI 15.7%-20%)
Patients who received at least one medication AND aged 75 years and older (n=129)	38% (95% CI 29.5%-46.5%)
Patients who received five or more medications (n=471)	30.1% (95% CI 26.6%-35%)
Patients who received 10 or more medications (n=172)	47% (95% CI 39%-54%)



# Types of prescribing error





# Severe errors

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- There were eleven severe errors
  - nine involved warfarin monitoring
  - two involved prescribing a drug to which the patient had a documented allergy.
- Of the nine warfarin-monitoring errors, eight occurred in the same GP practice, where it was routine practice to prescribe warfarin without knowledge of the patient's INR.
- No documented evidence of any actual harm arising for any of these severe errors.



# Factors associated with errors

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## Increased risk:

- Age
  - Less than 15 years (odds ratio 1.87 (95%CI 1.19-2.94))
  - Greater than 75 years (odds ratio 1.95 (95%CI 1.19-3.19))
- Number of unique medication items prescribed (odds ratio 1.16 for each additional medicines prescribed)
- Preparations in the following therapeutic areas:
  - (cardiovascular, infections, malignant disease and immunosuppression, musculoskeletal, eye, ENT and skin)

## Reduced risk:

- Female gender (odds ratio: 0.66, 95%CI 0.48-0.92, P=0 .013)



# Causes of errors

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- A wide range of underlying causes of error were identified relating to:
  - Prescriber
  - Patient
  - Team
  - Working environment
  - Task,
  - Computer system
  - Primary/secondary care interface



# Recommendations

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- GP training.
- Continuing professional development for GPs.
- Clinical Governance.
- Effective use of clinical computer systems.
- Improving safety systems.
- Pharmacists more involved with medication review



# Summary

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- Prescribing errors in general practices are common, although severe errors are unusual.
- Many factors increase the risk of error.
- Strategies for reducing error should focus on:
  - GP training
  - continuing professional development for GPs
  - effective use of clinical computer systems
  - improving safety systems within general practices
  - Improving systems at the interface with secondary care



# Acknowledgements

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- GMC for funding the study.
- Professor Tony Avery for the slides
- The work is in collaboration with UCL School of Pharmacy, University of Reading, University of Hertfordshire and University of Nottingham.
- The general practices that took part in the study.
- The pharmacists who collected data for the study.
- Staff outside the general practices who were involved in root cause analyses and focus groups.