Why do we need methods to measure the impact of pharmacovigilance?

ENCePP Plenary Meeting 2015

Presented by Jacoline Bouvy, National Institute for Health and Care Excellence (NICE)

Objectives of Pharmacovigilance

1. Protect and promote public health

2. Enable safe and effective use of medicines
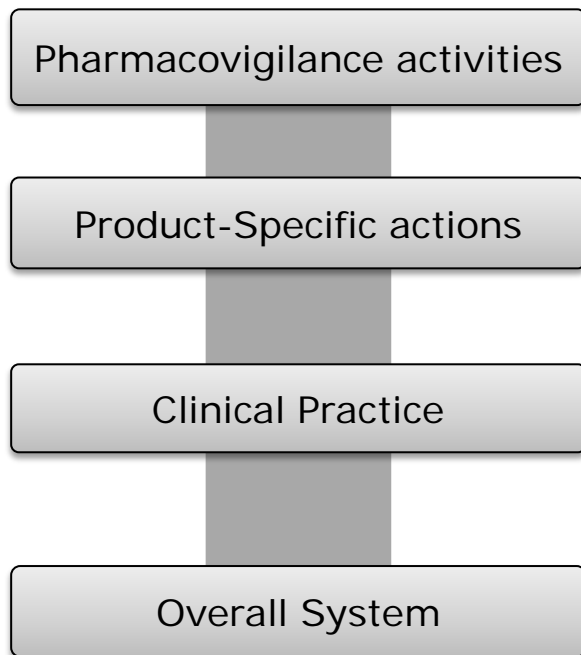
Measuring the impact of pharmacovigilance

1. Are pharmacovigilance activities in fact delivering these objectives
2. Identify areas where possible improvements could be made

What methods could be used to measure the **health** impacts of pharmacovigilance activities?

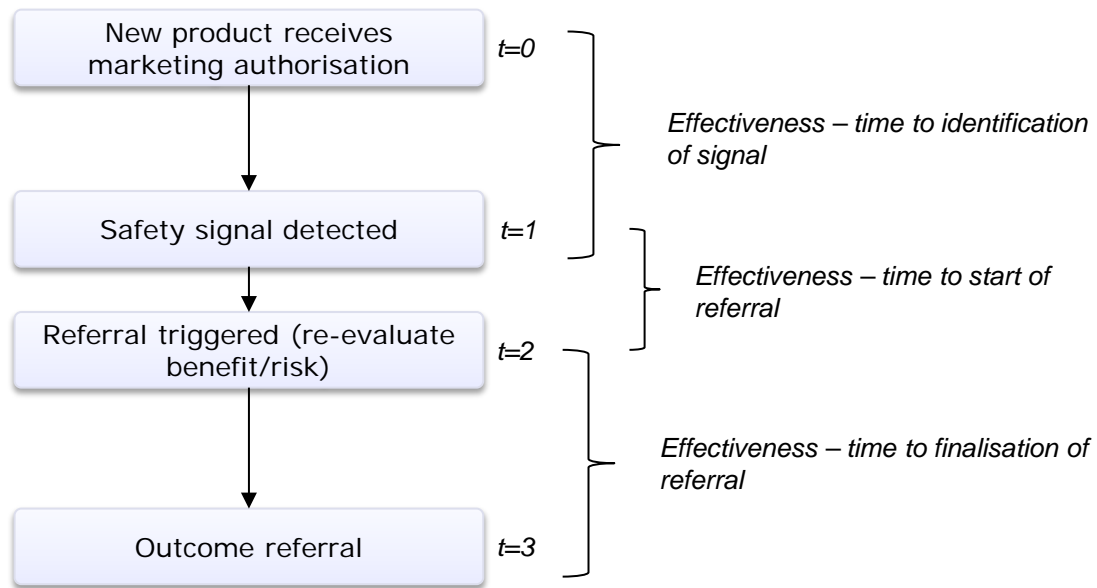# How do pharmacovigilance activities generate health impacts?

Domains

Example:

| Pharmacovigilance activities | *Signal detection, Post-Authorisation Studies, PSURs, referrals* |

| Product-Specific actions | *SmPC change, suspension of marketing authorisation, Direct Healthcare Professional Communication (DHPC)* |

| Clinical Practice | *Change in prescribing practices* |

| Overall System | *Health burden of ADRs reduced* |

New product receives marketing authorisation — *t=0*

Safety signal detected — *t=1*
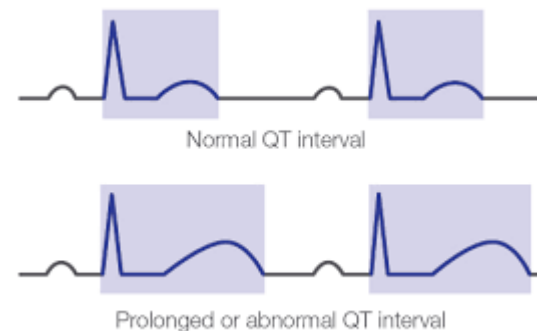
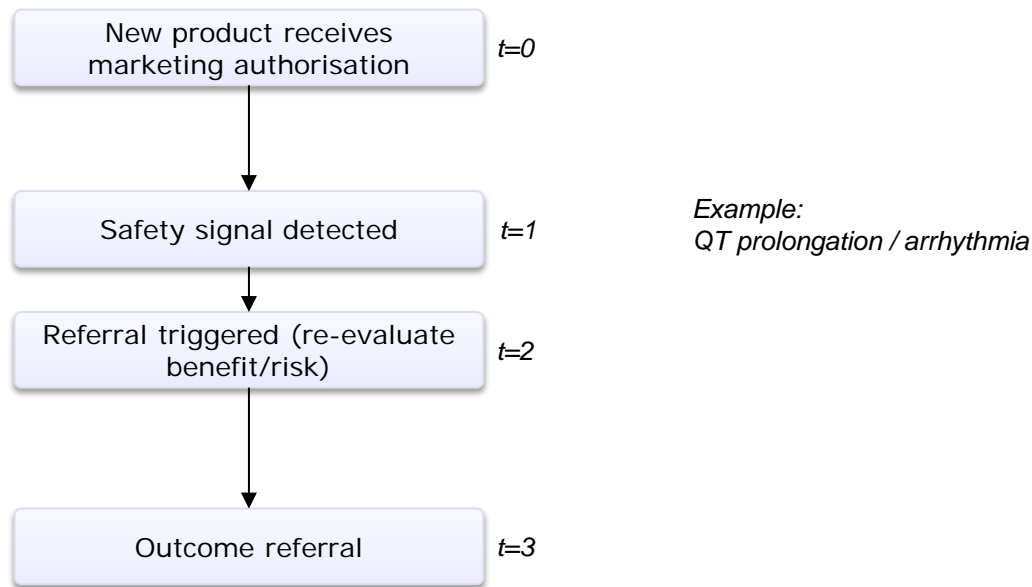Referral triggered (re-evaluate benefit/risk) — *t=2*

Outcome referral — *t=3*
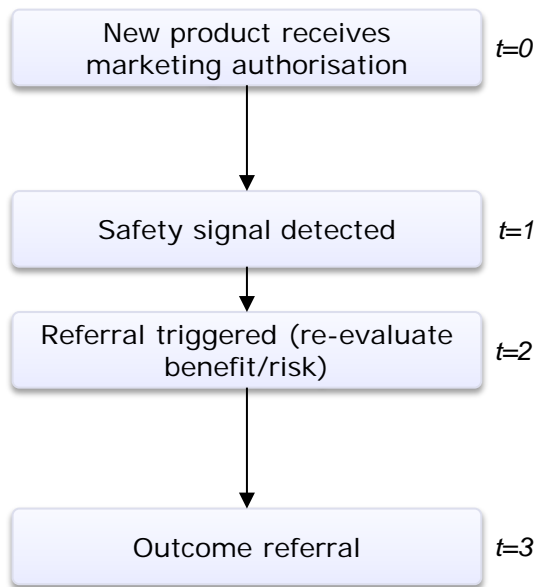
Benefit/risk positive but healthcare professionals are advised to perform ECG in starting users

Example:
QT prolongation / arrhythmia

Normal QT interval

Prolonged or abnormal QT interval

New product receives marketing authorisation   *t=0*

Safety signal detected   *t=1*

Example:
QT prolongation / arrhythmia

Referral triggered (re-evaluate benefit/risk)   *t=2*

Outcome referral   *t=3*

Measuring effects:
- Are healthcare professionals following advice?
  - *% of new starters that undergo one baseline and one follow-up ECG*
- How many cases of QT prolongation/arrhythmia/sudden cardiac death are prevented?
  - *Probability of experiencing QT prolongation/arrhythmia when using medicine*

Before signal detected + referral:

After signal detected + referral:

Total number of medicine users
Cases of QT prolongation/arrhythmia
Fatal/non-fatal

Effectiveness

Total number of medicine users
Cases of QT prolongation/arrhythmia
Fatal/non-fatal

Difference will be determined by:
-Impact referral on total number of users
-Compliance with preventive measures (ECGs)
-Effectiveness of preventive measures

Methods for measuring health impacts

- **Number of users medicine before and after referral:**

  - Prescription data

  - Claims data

  - Hospital medicines use?

  - Sales data

  - Regulatory data: cumulative exposure (PSUR)

  - *Without any data*: incidence/prevalence of indication, assumptions regarding proportion of patients that use medicine

- **Compliance with ECGs:**

  - Electronic health records

  - Surveys of healthcare professionals

9

Methods for measuring health impacts

- **Option 1:**

  - Measure number of users before and after referral

    - *Timing of before and after?*

    - *Spill over effects to other medicines (e.g. in medicine class)?*

  - Measure compliance with ECG monitoring

    - *Constant over time?*

  - Assume effectiveness of ECG monitoring in preventing events

    - *e.g. 30% compliance prevents 30% events*

- **Option 2:**

  - Measure number of cases of arrhythmia/sudden cardiac death among users before and after referral

    - *Not all cases of sudden cardiac death attributable to use medicine*

Methods

- Currently, no standard methods

- Yet, many case studies, examples, and monitoring activities in many countries

- Methods and data sources required may differ on case-by-case basis

Implications of measuring health outcomes

- Pareto principle (80/20 rule):

    - 80% of events come from 20% of causes

- Application to health burden of ADRs:

    - Likely very skewed

    - Possible that relatively few ADRs generate the majority of hospitalisations and deaths caused by ADRs

Implications of measuring health outcomes

- Public health impact: determined by incidence of serious ADRs **and** volume

  - What constitutes efficient pharmacovigilance?

  - Do all medicines require the same approach – from a public health perspective?

Thank you

'We've considered every potential risk except the risks of avoiding all risks.'