BETA₂-AGONISTS AND MYOCARDIAL INFARCTION: ASSESSING PATTERNS OF RISK

Using Clinical Practice Research Datalink (CPRD) to improve and safeguard public health
Using CPRD* for public health research: a case study

Beta₂-agonists are commonly prescribed for treatment of asthma. Observational studies¹–³ have reported a possible association between beta₂-agonists and increased risk of CV events, such as myocardial infarction (MI). However, interpretation of data from observational studies is often complicated by confounders that make it difficult to separate the effects of treatment from disease-related outcomes. In asthma, treatment is defined by disease severity, further compounding the problem of analysing risk associated with asthma medication.

A research study was performed using a novel methodology to assess patterns of risk of MI during exposure to beta₂-agonists. Patterns of risk of MI were also evaluated among patients prescribed inhaled corticosteroids (ICS), as these have been shown to reduce adverse cardiovascular outcomes.⁴ The analysis focused on the convergence / divergence of hazard rates for MI rather than on estimating relative rates using standard regression analysis. If two hazard rates are substantially different but remain parallel with changes in exposure, this pattern analysis would suggest a lack of differential effects.⁴

Using CPRD data to investigate MI risk in patients with asthma

The study used data from the General Practice Research Database (GPRD; now CPRD GOLD*) and linked hospital data to compare patterns of risk of MI during exposure to long-acting beta₂-agonists (LABA) with patterns of risk during exposure to inhaled short-acting beta₂-agonists (SABA) and inhaled corticosteroids (ICS). A total of 507,966 patients aged 18 years and over, who received prescriptions for SABA or LABA (with or without additional medication) between January 1993 and March 2007, were included in the study.

Results and clinical relevance

Using extensive, real world patient data and a novel methodology, this study:

- Demonstrated that patterns of risk of MI were broadly similar between LABA, SABA & ICS users, suggesting that there were no differences between these drugs and MI risk.
- Observed a higher risk of MI among first time users and long term heavy users of asthma medication, not only with inhaled SABA but also with ICS.

Benefits of using CPRD data for this research

CPRD uses data quality metrics to ensure provision of information that is valuable to your research. Using CPRD for this analysis provided access to:

- Real world patient data coded at the point of care, allowing patterns of medication exposure to be analysed.
- An extensive cohort of patient data from which to assess patterns of disease risk quickly and cost-effectively.
- Research-quality longitudinal data that can be collected and analysed efficiently, and which increases generalisability.
- Linked secondary care data from which rates of acute MI or hospitalisation for acute MI were confirmed for this extensive patient cohort.

Research-quality data from CPRD drives evidence based-medicine

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*CPRD incorporates the highly regarded General Practice Research Database (GPRD), now known as CPRD GOLD.

What is CRPD?

CRPD is a secure, world-class e-health research system that links anonymised National Health Service (NHS)† healthcare and demographic datasets, providing a unique national resource for researchers. It incorporates the well-established, highly regarded GPRD, now known as CPRD GOLD. CPRD are taking an incremental approach to increasing population cover for primary care datasets, which are fundamental to CPRD GOLD. Access to an extensive cohort of patient data allows important research questions to be answered quickly and cost-effectively through observational research.

†England

A range of additional services are provided by CPRD:

- Clinical trial services, including a rapid feasibility and protocol optimisation tool and efficient access to patients.
- Interventional services, including randomisation at point of care within a real world setting, collection of patient-reported outcomes and biosamples.
- Research services provided by a highly qualified internal research team, with expertise in pharmacoepidemiology, pharmacoconomics, outcomes research and risk benefit.

Recent developments: hospital prescribing, linkage and tracks

- Drugs in hospital: CPRD in partnership with IMS now have unique access to a growing volume of data for drugs administered in hospital or day care.
- CPRD now has all required governance approvals to link anonymised NHS data from a wide range of sources including National Clinical Audit data sets. In addition, CPRD will secure linkage agreements for additional datasets or disease registries as required in an approved protocol.
- TRACK Datamarts, created in response to a general research need or a specific request, will allow tracking of a specific cohort over time.

Do you have a research question? For further information, email the CPRD Knowledge Centre KC@CPRD.com and please go to http://www.cprd.com to be kept fully up-to-date with CPRD information.