

# Classification of Patients with Cardiovascular Diseases: Data from the Ontario Best Practices Research Initiative (OBRI)

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## BACKGROUND

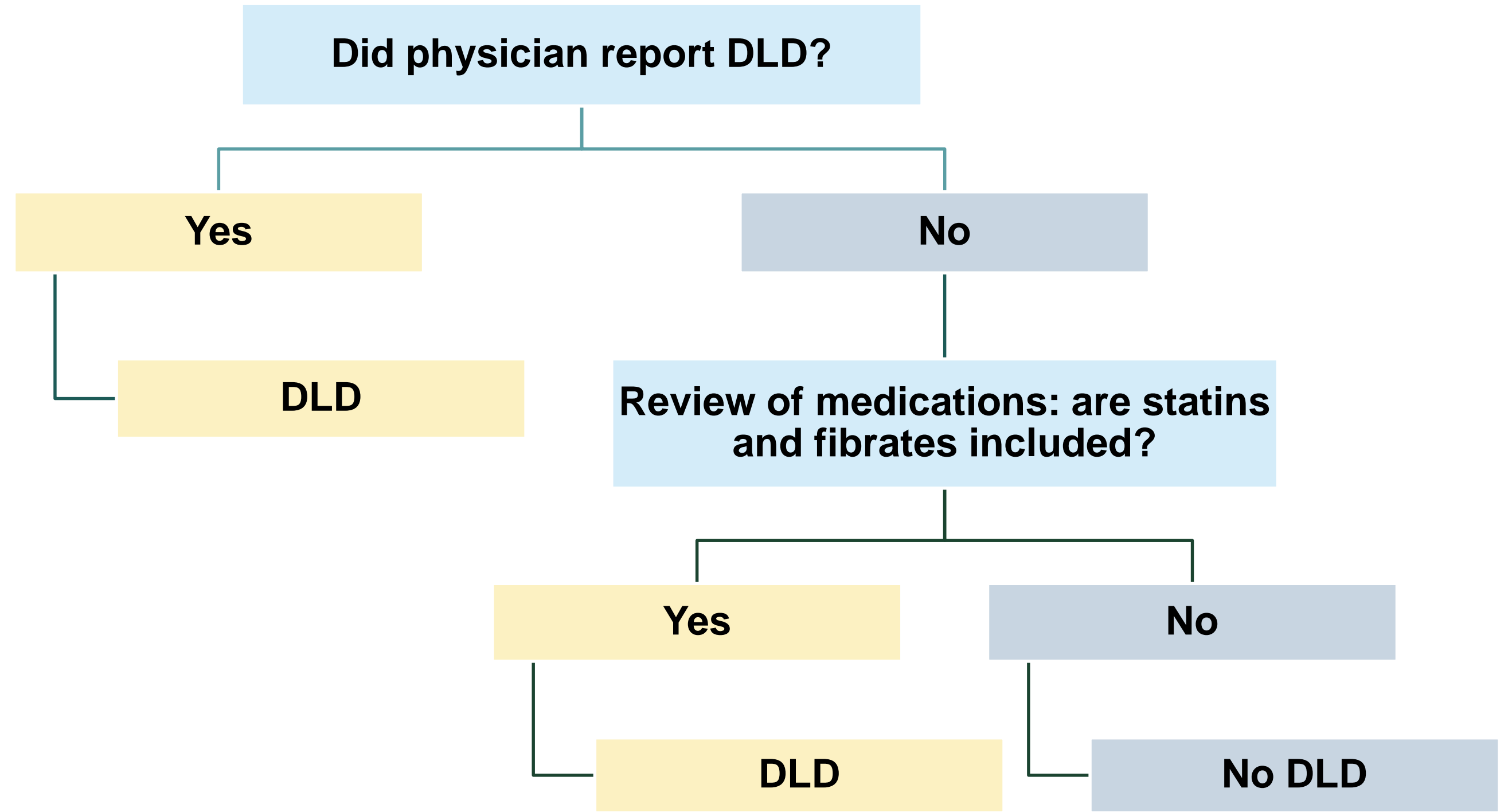
- Cardiovascular disease (CVD) is a major comorbidity and a leading cause of death among rheumatoid arthritis (RA) patients<sup>1-2</sup>.
- There are limited data on the prevalence and characteristics of RA patients with CVD in Canada.
- Ongoing research exploring CVD and its effect on RA disease outcomes has been undertaken at the Ontario Best-practices Research Initiative Rheumatoid Arthritis (OBRI-RA) Registry.
- Within the Registry, physician-reported cardiovascular disease has a broad definition, some of which do not meet the strict definition of "cardiovascular disease".
- Precisely identify and classify patients with cardiovascular disease and its risk factors is imperative for the success of future studies.

## OBJECTIVE

- To develop an algorithm in identifying and confirming the diagnosis of patients meeting the definition of CVD and CVD risk factors.

## METHODS

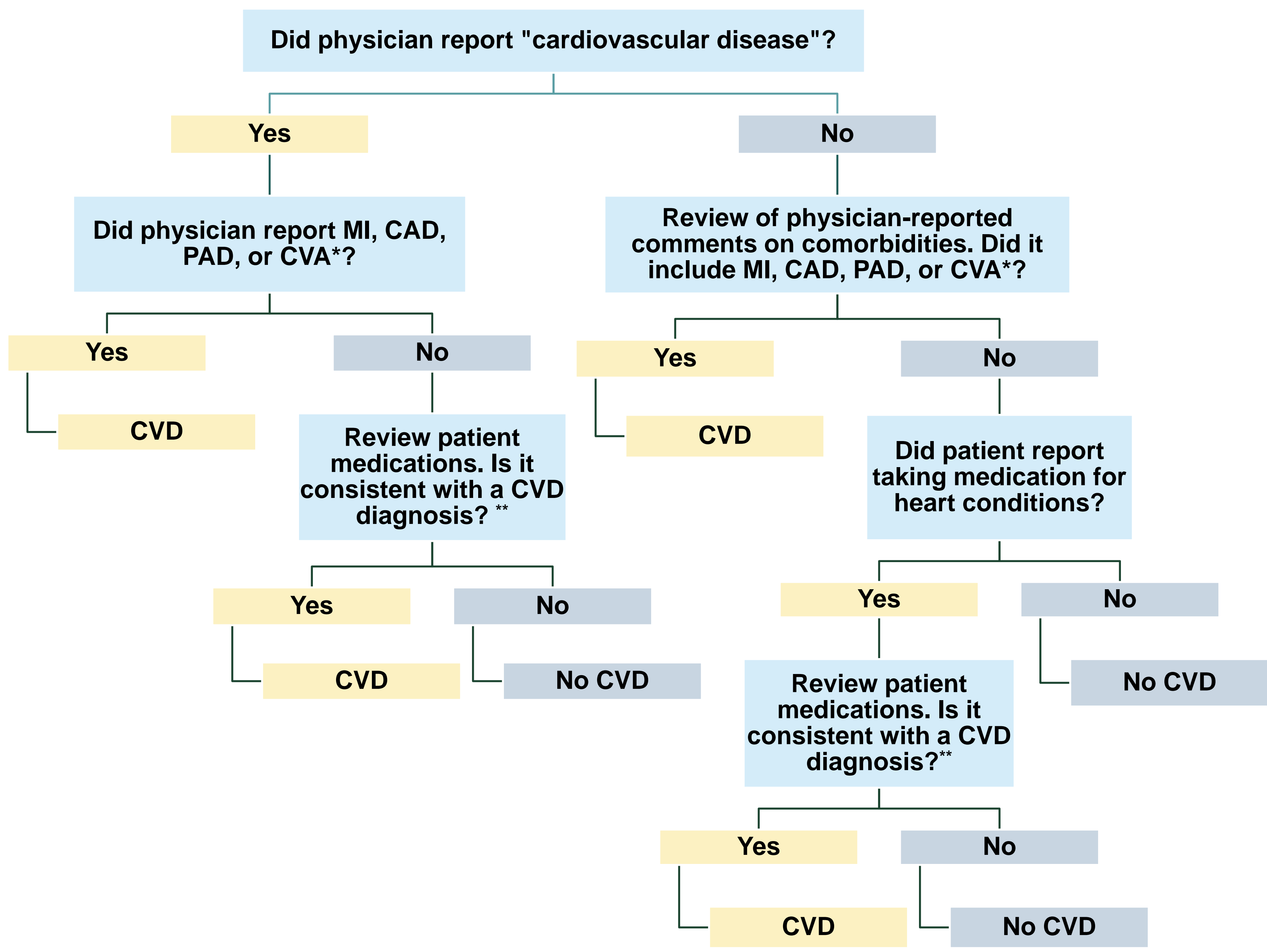
- Data (as of Jan 2017) were collected from the OBRI, a clinical registry adult RA patients followed in routine care in Ontario, Canada.
- CVD is defined as having one or more of the following:
  - Prior myocardial infarction (MI)
  - Interventions for coronary artery disease (CAD)
  - Transient ischemic attack (TIA)
  - Stroke
  - Peripheral arterial disease (PAD)
- CVD risk factors used in this study includes the presence of:
  - Hypertension (HTN)
  - Dyslipidemia (DLD)
  - Diabetes Mellitus (DM)
  - Being a current smoker at the OBRI enrolment
- The classification of CVD risk factors and CVD are outlined in **Figure 1 and 2** respectively.



**Fig. 1. Classification of DLD (as example for CVD risk factors classification) with physician and patient reported information.**

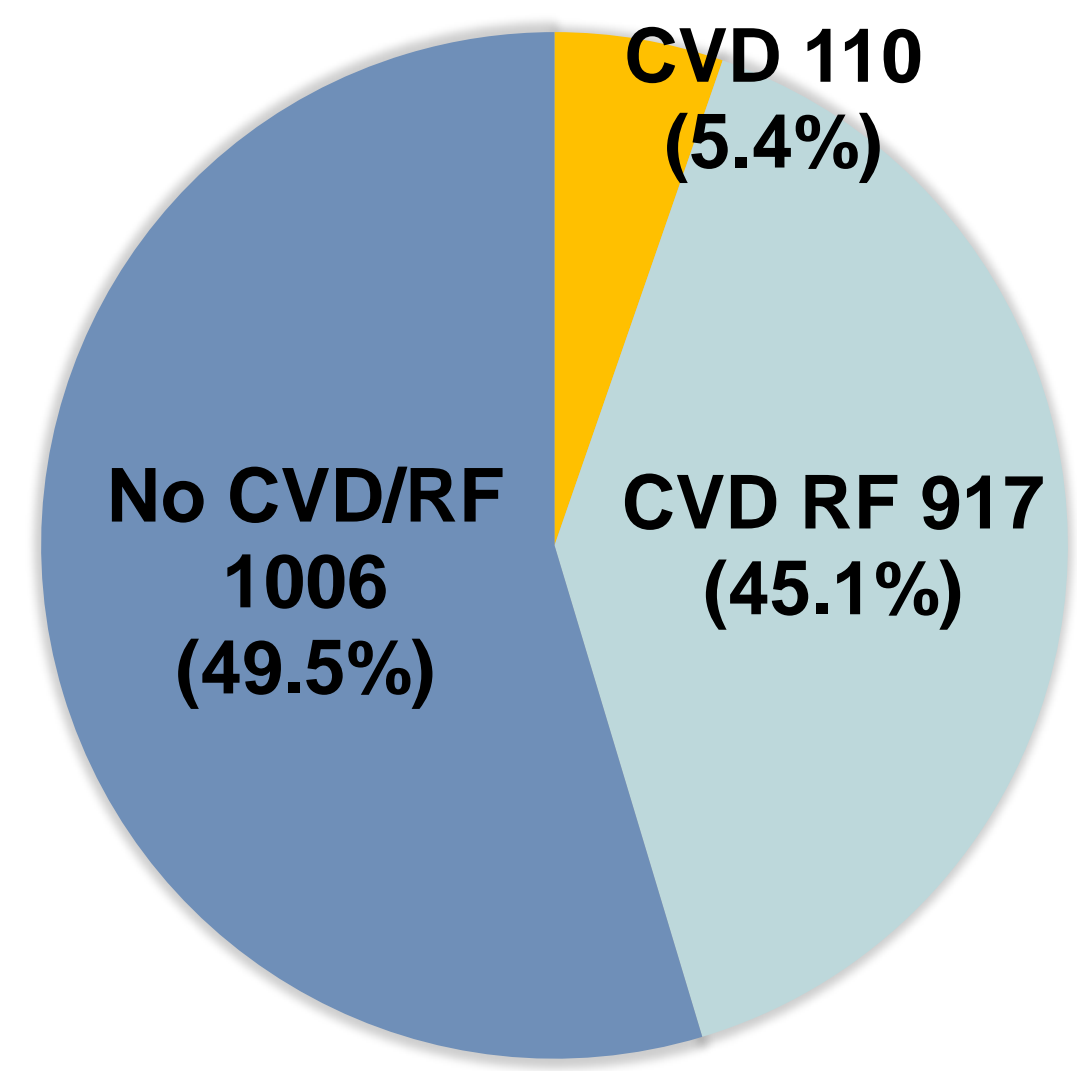
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## METHODS



**Fig. 2. Classification of CVD with physician and patient reported information.**  
 \* MI: myocardial infarction; CAD: coronary artery disease; PAD: peripheral artery disease, CVA: cerebral vascular accident (including stroke and TIA).  
 \*\* Clinical judgement is applied at this step. Information considered includes whether the patient is on anti-platelet agents, anti-hypertensives, cholesterol control medications, or nitroglycerines. For uncertain cases, a second reviewer's opinion is weighed in.

## RESULTS



**Fig. 3. The prevalence of CVD and CVD RF.**

**Table 1. The prevalence of individual CVD and CVD RF.**

Individual CVD	N (%)
MI/CAD	98 (4.8%)
Stroke/TIA	11 (0.5%)
PAD	1 (0.1%)

Individual CVD risk factor	N (%)
Hypertension	670 (33.0%)
Diabetes Mellitus	165 (8.1%)
Dyslipidemia	401 (19.7%)
Current smoking	346 (17.0%)

## RESULTS

- Additional patients were classified after medication review: 17 subjects (15.7%) for CVD, 207 for HTN (31%), 291 for DLD (73%), and 22 for DM (13%).
- Chart review of 55 patients showed sensitivity of 100% for CVD, 78% for HTN, and 42% for DLD classification.
- 110 out of 2033 patients (5.4%) was classified as having CVD (**Fig. 3**).
- The prevalence of CVD, HTN and DM in OBRI-RA cohort was comparable to international cohorts, while the prevalence of DLD and smoking was lower (**Table 2**).
- Among patients with CVD RFs, the majority has one risk factor (36.7%), followed by two risk factors (11.7%).

**Table 2. Comparison of prevalence of CVD and CVD RF in OBRI-RA cohort against selected international cohorts.**

	OBRI	US pharMetrics*	COMORA**	Swedish RA Registry#
CVD	5.4%	4.0%-8.8%	6%	4.5% (MI only)
HTN	33.0%	31%	40%	27.3%
DLD	19.7%	28.3%	32%	n/a
DM	8.1%	10.4%	14%	8.1%
Smoking	17.0%	n/a	20%	29.8%

\* Largest integrated US health plan database with 28,000 RA patients  
 \*\* International registry with 4500+ patients recruited in 17 participating countries from Asia, Europe, and America.  
 # Early RA registry based in Sweden.

## CONCLUSIONS

- We have successfully developed an algorithm for classifying patients with cardiovascular disease.
- The algorithm is applicable for the classification of other comorbidities captured in the OBRI-RA registry.
- This study highlights the complexity of data extraction from clinical registry.
- The lower prevalence of DLD could be explained by the local-regional difference in disease prevalence as well as potential classification bias.
- Further analysis is underway to explore the effects of CVD and its RF on RA outcomes.

## REFERENCES

- Choy E et al. Cardiovascular risk in rheumatoid arthritis: recent advances in the understanding of the pivotal role of inflammation, risk predictors and the impact of treatment. Rheumatology (Oxford, England) Published Online First: 2014.
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