Introduction
The identification of DLB as a distinct disease is relatively recent. Its diagnosis is based on diagnostic criteria, which were updated over the years. Our aim was to perform a systematic review of the studies on diagnostic accuracy in dementia with Lewy bodies (DLB) and to meta-analyse sensitivity, specificity and accuracy of the used diagnostic criteria, in order to evaluate how they changed over time.

Methods
Systematic review
We performed electronic searches of MEDLINE and SCOPUS databases. We performed the last search on December 2015. We excluded abstracts and chapters of book. We included articles if they reported any of diagnostic parameters or raw data, specifically regarding the clinical diagnosis of DLB. We decided to perform the meta-analysis only on those studies that used pathological examination as gold standard. We excluded the studies not specifying the criteria used or using multiple diagnostic criteria. Two authors (GR and RS) independently performed the literature search, selected all potentially relevant papers, screened the full texts, and extracted data from the eligible studies. Disagreements were resolved by asking the opinion of a third reviewer (GL).

Data preparation
We evaluated the different diagnostic criteria used, and if the criteria were applied in the early (<3 years) or later stage of disease (>3 years). We defined three categories of diagnostic criteria: “criteria antecedents to those of McKeith 1996”, “McKeith criteria 1996” and “McKeith criteria 2005”. Some studies reported accuracy based on different diagnostic criteria in the same population and on diagnosis of possible or probable separately. Those studies were included in the meta-analysis with more than one record. When the diagnosis was not distinguished between possible and probable, we considered the diagnostic parameters as for a diagnosis of possible DBL (actually possible + probable).

Given that PPV and NPV are more conditioned by the difference proportion of patients with DLB or other diseases evaluated in each specific setting, and therefore less generalizable, we only meta-analysed sensitivity, specificity, and accuracy values.

Statistical analysis
Bayesian meta-analyses of available data were performed. Bayesian methods offer a sensitivity, specificity, and accuracy values. Bayesian methods offer a flexible approach to the approach to be extended to consider complex likelihood functions other than Normal. Bayesian methods might also perform better and provide robust credible intervals in applications with a relatively small number of studies.

Results

Table 1. Records from the studies included in the meta-analyses.

Conclusions
One out five patients with DLB has a misdiagnosis. DLB diagnostic criteria have become more sensitive and less specific over time. Diagnostic accuracy did not substantially changed in the last years, and is influenced by the different clinical setting. Further improvement is needed to optimize the clinical diagnosis of DLB, eventually using biomarkers.

References

- **Including Savica et al 2015 (clinical setting not focused on dementia but parkinsonism):** 84.7%.
- **Including Savica et al 2013 (clinical setting not focused on dementia but parkinsonism):** 80.7%.

Figure 1. Flow-chart of electronic search: selection of included studies

Figure 2. Forest plot: Pooled specificity of studies

Figure 3. Forest plot: Pooled specificity of studies

Figure 4. Forest plot: Pooled accuracy of studies

Table 1. Records from the studies included in the meta-analyses.