

Exploring efficiency of Living Systematic Literature Review (SLR) tool for submissions of clinical evidence to National Institute for Health and Care Excellence (NICE) by combining interventional and real-world evidence (RWE).

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Separate systematic searches for interventional evidence and RWE have to be combined into one source of clinical evidence in preparation for health technology assessments (HTA). LiveSLR is a tool that could automatically combine separate searches and produce HTA submission tables efficiently.

Background

- When conducting an SLR, clinical evidence is searched either as combination of both interventional and RWE, or separately.
- However, NICE requires combining all clinical evidence.
- Flexibility is needed in reporting interventional and RWE evidence separately to support indirect comparisons and other health-economic analyses for both.

Objective

- We explored whether a Living-SLR tool can significantly improve efficiency by accommodating both types of evidence and creating combined clinical evidence NICE submission tables.

Methods

LiveSLR as an automatic report-producing tool

- LiveSLR® is an up-to-date Cochrane/NICE-compliant curated SLR library following PRISMA standards, maintained by experienced reviewers.
- The structured database in LiveSLR allows additional customizations of the original SLR, as well as automatic generation of tables, and reports
- Comparison of manual vs. LiveSLR automatic table preparation timeline
- Relapsed/refractory multiple myeloma (RRMM) SLR library was used to analyze the manual vs. LiveSLR automatic table production.
- Manual table production was done using Microsoft Excel and copying and pasting data from interventional evidence and RWE.
- Automatic table production was done using LiveSLR and its built-in report-generation feature.

Results

- The RRMM SLR database is an ongoing SLR project that is updated twice a year on average since 2020.
- The database searches were conducted on the following dates:
 - November 7th, 2020
 - May 17th, 2021
 - June 21st, 2021
 - November 11th, 2021
 - January 4th, 2022
 - April 11th, 2022
 - October 30th, 2022
 - February 23rd, 2023
 - May 30th, 2023
- The following biomedical databases were searched:

- Ovid MEDLINE(R)
- Embase
- Econlit
- EBM Reviews - Cochrane Database of Systematic Reviews
- EBM Reviews - ACP Journal Club
- EBM Reviews - Database of Abstracts of Reviews of Effects
- EBM Reviews - Cochrane Clinical Answers
- EBM Reviews - Cochrane Central Register of Controlled Trials
- EBM Reviews - Cochrane Methodology Register
- EBM Reviews - Health Technology Assessment
- EBM Reviews - NHS Economic Evaluation Database
- Search strategies, inclusion and exclusion criteria, and PRISMA diagrams are available upon request.
- Multiple extractions were done on each unique study, depending on the reported analysis type (overall, subgroup), search dates, followup date.
- Extractions were done in Microsoft Excel. There were a total of 3,421 rows of data across 295 columns.

- HTA submission tables: 7 different tables were created both manually through Excel and automatically through LiveSLR. Tables 1-7 below show the table headings for each.

Table 1. Study and Publication Mapping

LiveSLR Study ID	Study Registry ID	Study Registry Name	Primary Publication	Related Publications
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Table 2. Summary of Clinical Study Characteristics

LiveSLR Study ID	Update date	Primary Publication	Study Design	Population	Geographical region	Population filter 1	Population filter 2	Treatment	Study N
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Table 3. Summary of Patient Demographics and Baseline Characteristics

LiveSLR Study ID	Primary Publication	Study Registry Name	Treatment	Study N	Age, Median	Male, N (%)
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Table 4. Summary of Overall Survival Results

LiveSLR Study ID	Analysis Type	Update date	Primary Publication	Study Design	Treatment	Follow-up Period	Median time to event	Uncertainty	Comparison Type & Value	Comparison Confidence Interval	p-value
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Table 5. Summary of Progression-Free Survival Results

LiveSLR Study ID	Analysis Type	Update date	Primary Publication	Study Design	Treatment	Follow-up Period	Median time to event	Uncertainty	Comparison Type & Value	Comparison Confidence Interval	p-value
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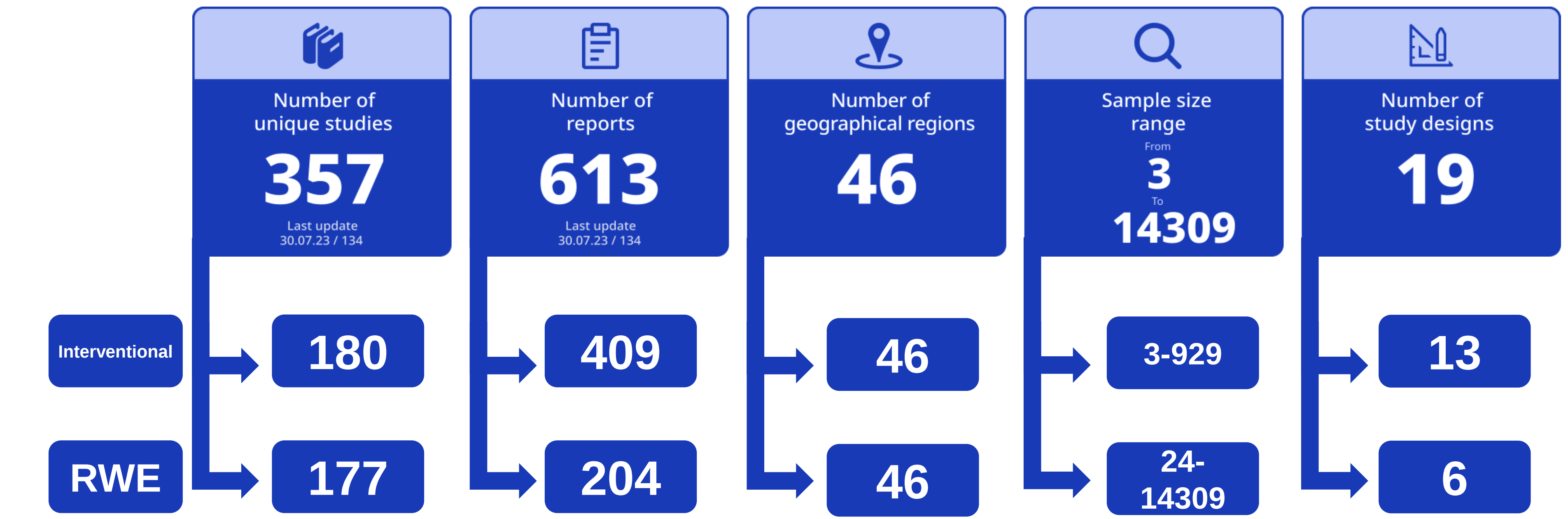
Table 6. Summary of Overall Response Rate Results

LiveSLR Study ID	Analysis Type	Update date	Primary Publication	Study Design	Treatment	Timepoint (Unit)	N of Patients evaluated	Patient's experiencing event N (%)	Comparison Type & Value	Comparison Confidence Interval	p-value
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Table 7. Summary of Safety Results

LiveSLR Study ID	Analysis Type	Update date	Primary Publication	Study Registry Name	Study Design	Treatment	Follow-up Period	Safety N	Safety Outcome Type (Any/TE/RT)	Total subjects experiencing AEs N (per arm)	AEs leading to D/C N (per arm)	SAEs N (per arm)
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Figure 1. Distribution of RRMM Interventional vs. RWE included studies

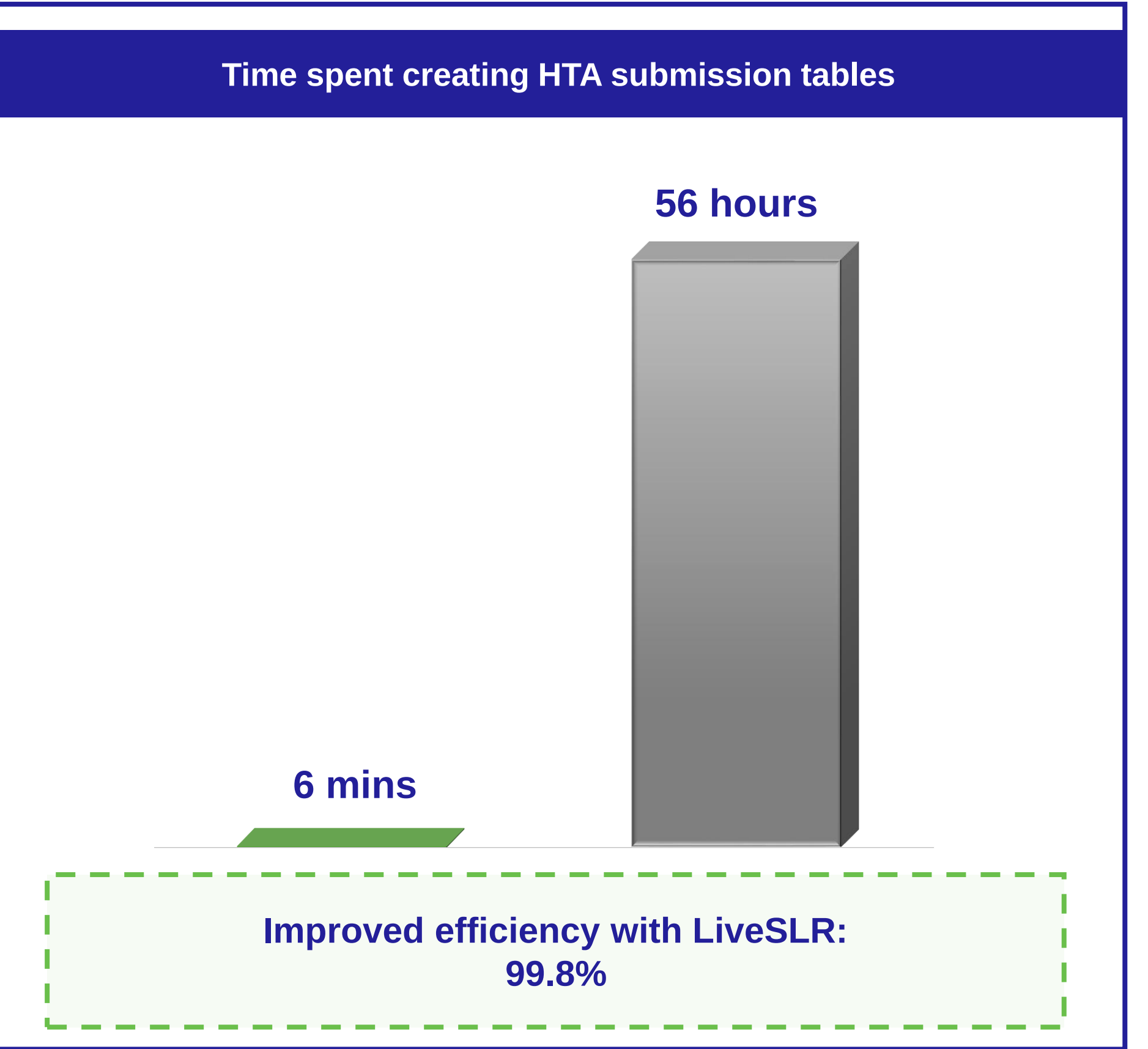


Overview of RRMM database

- An overview of the RRMM SLR database can be seen in Figure 1.
- The RRMM SLR database includes 357 unique studies in total, 180 interventional, 177 RWE
- 613 individual reports are included, 409 from interventional and 204 from RWE
- These studies cover 46 geographical regions, even separated by interventional vs. RWE
- Interventional studies had a sample size range of 3-929 patients, while RWE studies ranged from 24-13,409 patients.
- A total of 19 study designs were included, 13 from interventional and 6 from RWE

- Manual preparation produced 14 tables in total, 7 for interventional, and 7 for RWE.
 - Each table took on average 4 hours to prepare.
 - Other than copying and pasting, formatting, sizing, the most time-consuming tasks were due to inconsistent extraction templates between interventional and RWE, and study ID and publication mapping.
 - A total of 56 hours were spent to manually create the HTA submission tables.
- Automatic preparation produced 7 tables, with both interventional and RWE data combined, which is preferred by HTA submissions.
 - Downloading the Microsoft Word report containing automatically produced tables from LiveSLR took around 2 minutes.
 - Additional Microsoft Word reports with separated interventional and RWE data (if required, with 14 tables in total), took an additional 4 minutes.
 - A total of 6 minutes were spent to automatically create the HTA submission tables
- Time savings of 55 hours 54 minutes created 99.8% improvement in efficiency. Figure 2 shows a visual comparison of this improvement.

Figure 3. Comparison of efficiency between Excel and LiveSLR®



LiveSLR automatic tables Traditional Excel manual tables

Conclusions

Separate systematic searches for interventional evidence and RWE have to be combined into one source of clinical evidence in preparation for health technology assessments (HTA). LiveSLR is a tool that could automatically combine separate searches and produce HTA submission tables efficiently.