Machine-Learning Technology Assisted Curated Reference Libraries As an Approach for Rapid Global Value Dossier Updates to Support Living Health Technology Assessment: A Case Study in Triple Refractory Multiple Myeloma (TRMM).

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HTA102

Introduction

- The rapid pace of evidence generation and clinical development along with the advent of machine-learning technologies (MLT) has led NICE and other reimbursement bodies toward a "living" approach to health technology assessment (HTA).[1-3]
- Traditional development methods for global value dossiers (GVDs), which serve as the basis for HTA submissions, cannot support the Living HTA approach.

Living HTA approach

Figure 1. Living HTA
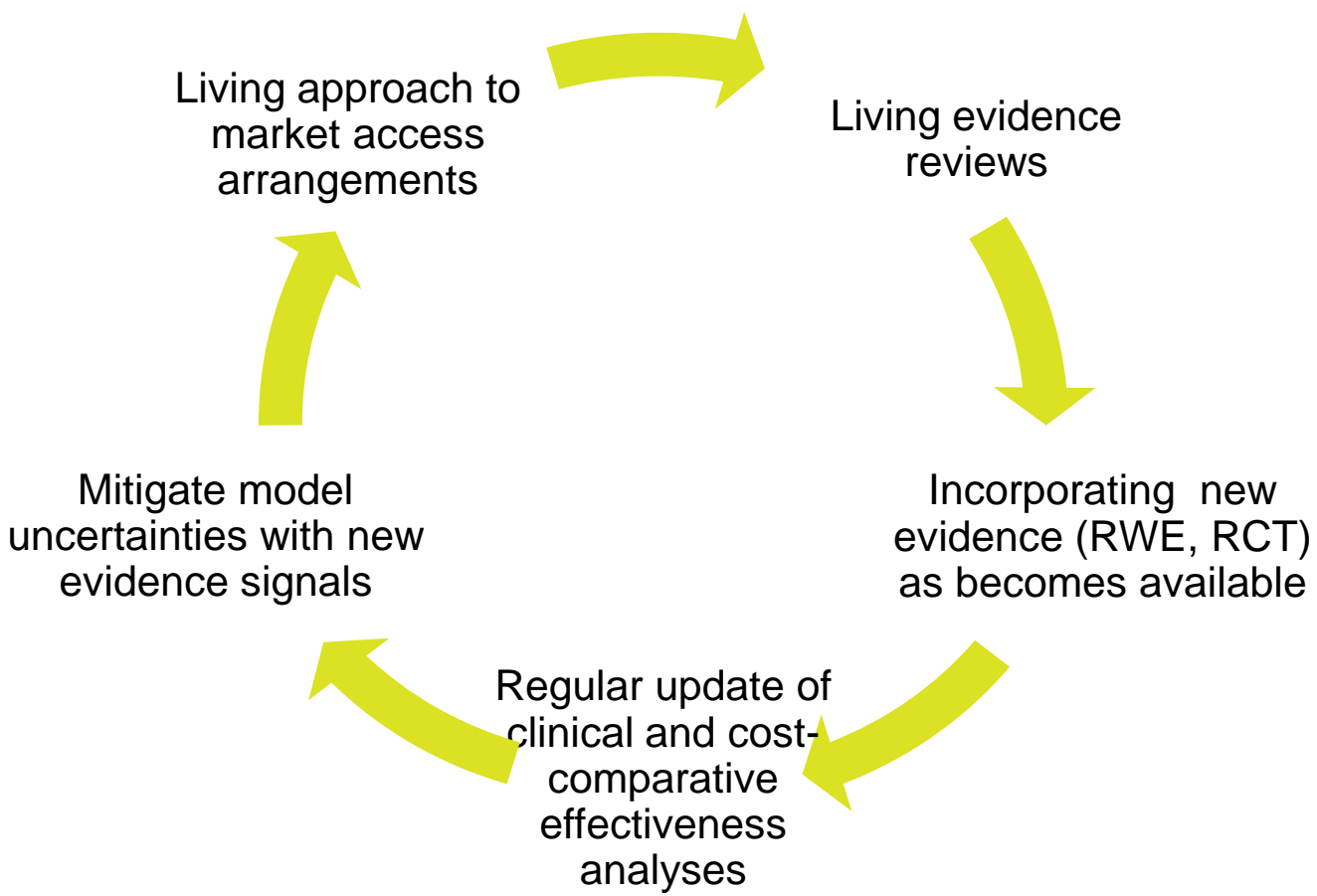
Curated library

- LiveRef is a continuously updated, web-based, library of indication-specific publications reporting epidemiology, disease burden, treatment practices, and comparative effectiveness (**Figure 2**).
- MLT-assisted data reviews and extractions are performed in compliance with PRISMA guidelines; EMBASE, MEDLINE, and Cochrane databases, scientific congresses, trial registries, regulatory and HTA websites are searched and data on relevant populations, interventions, geographies, study designs, and results are extracted, loaded to an interactive platform, linked to original publications, and organized by GVD chapter.

Figure 2. LiveGVD Library

1 **Select category of evidence**

2 **Select sub-population, country or product**

3 **Review relevant publications, download pdfs**

Objective

- **To explore the utility of an MLT-assisted curated reference library to support Living GVD through a case study in triple refractory multiple myeloma (TRMM).**

Case study results

- An initial GVD for a product in TRMM was created in April 2021, with 188 original references extracted and loaded into LiveRef. The previous update followed a typical development GVD update process (**Figure 3**); however, the 2021 update used LiveRef (**Figure 4**).

Figure 3. Typical GVD update process

- With 13 relevant scientific congresses presenting 605 interventional, humanistic, economic, and real-world-evidence studies for MM in 2021, a GVD update in March 2022 required inclusion of 59 new references, 35 of which were conference presentations, primarily contributing to the disease burden, current treatment, and unmet need sections of the GVD.
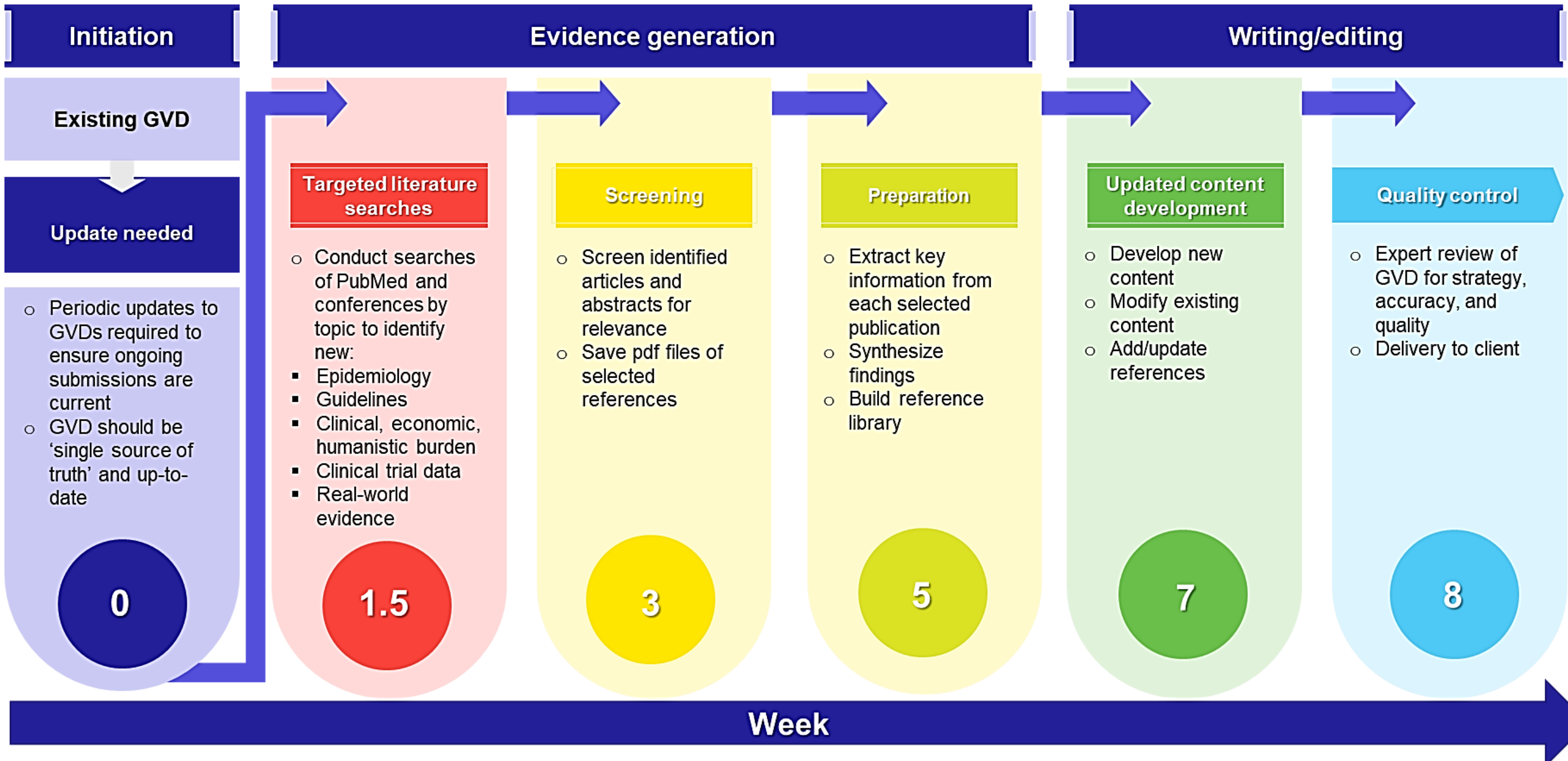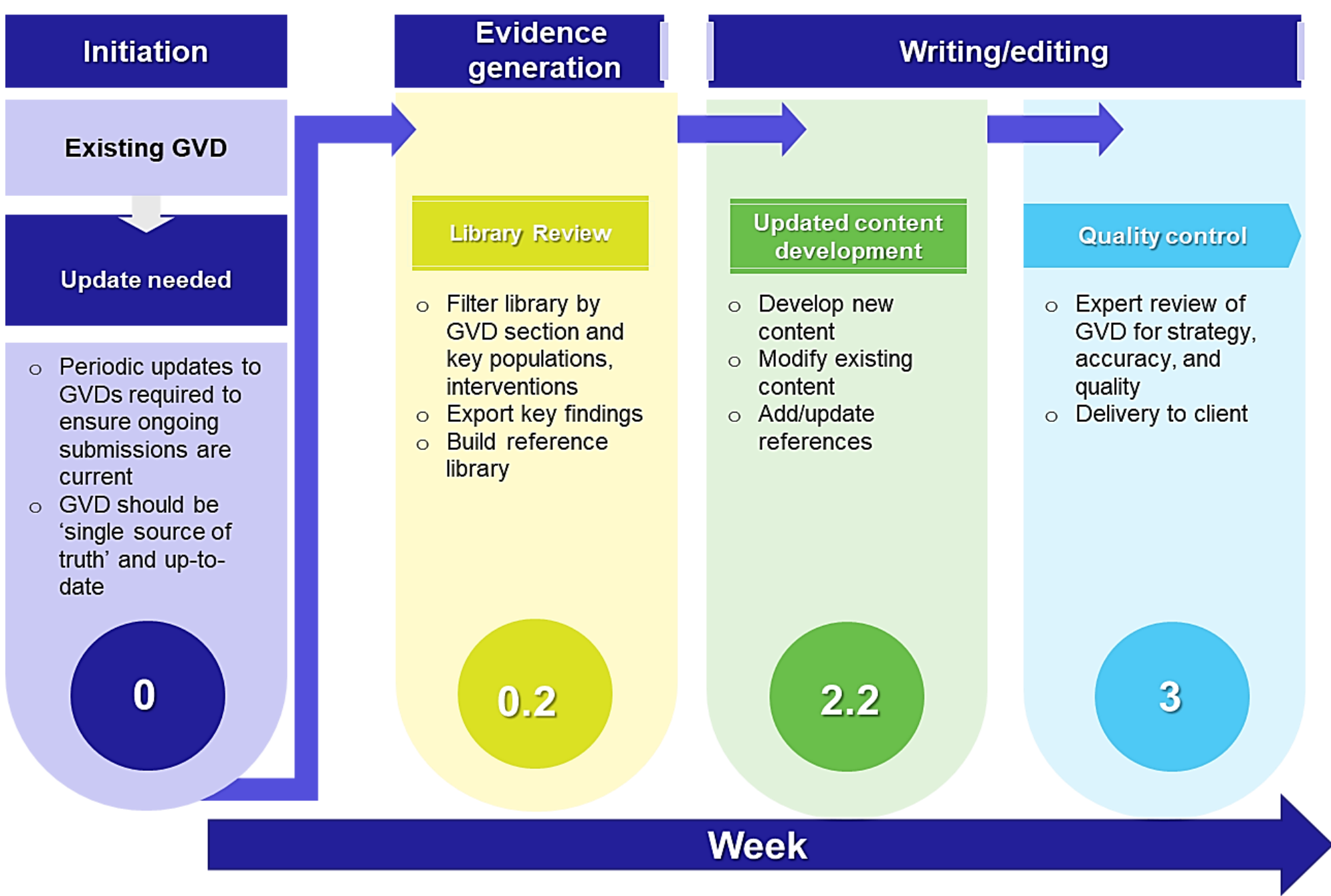
Figure 4. GVD update with LiveRef

Efficiency analysis

- Efficiency realized from the use of the LiveRef library translated 3 weeks vs estimated 8 weeks using conventional update methodology (**Figure 5**).
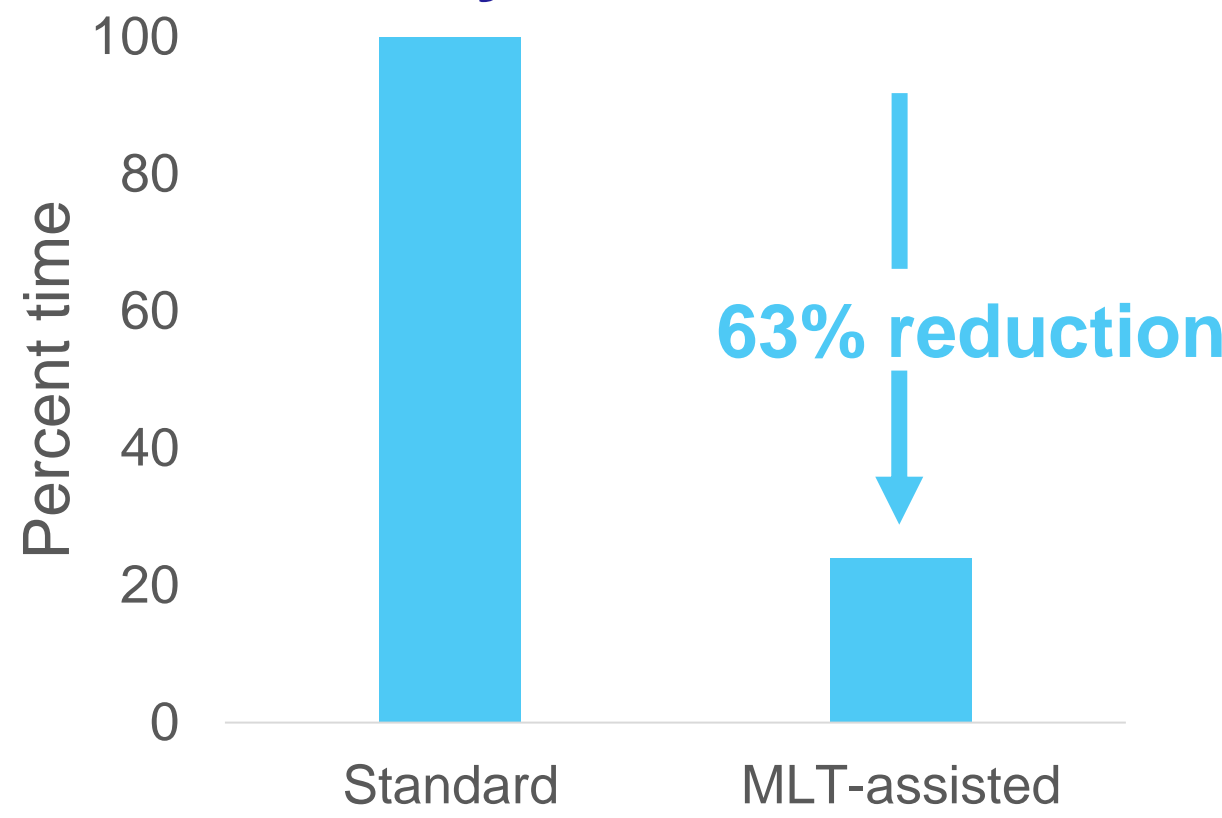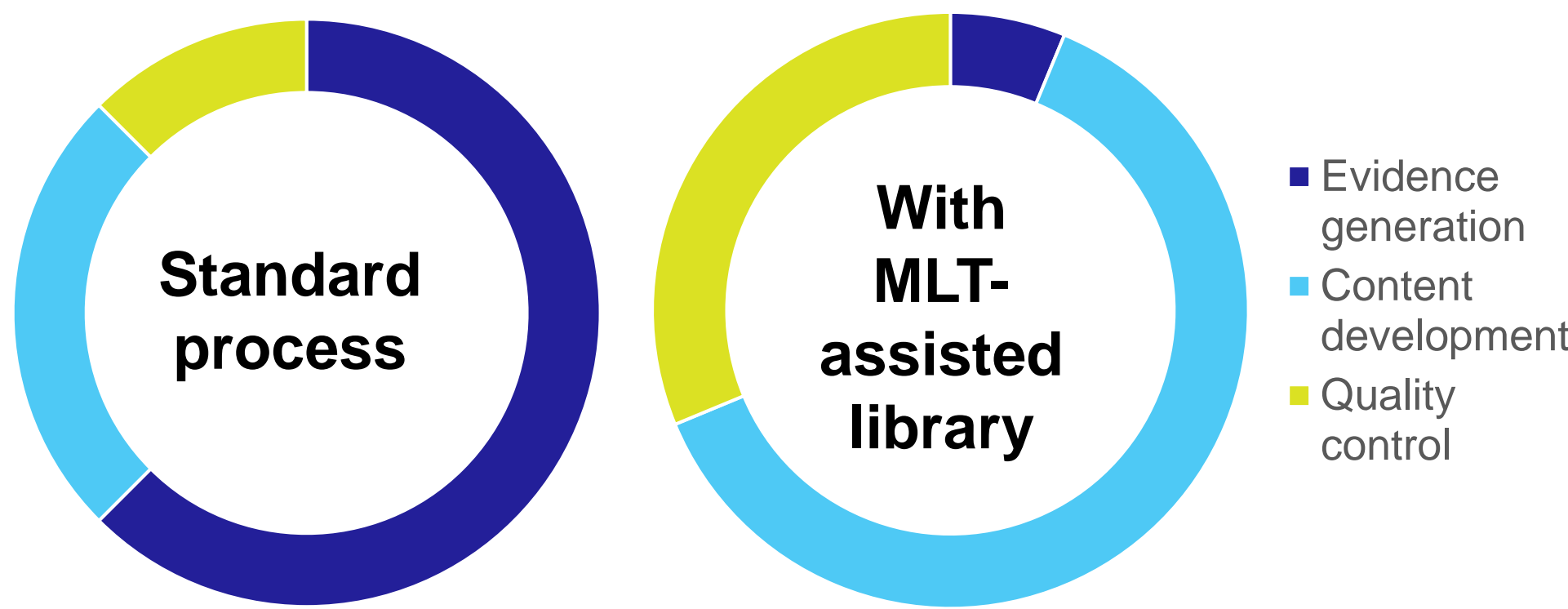
Figure 5. Efficiency

63% reduction

Effort analysis

- When examining the amount of time spent by task, most evidence generation time was eliminated. The time and effort burden shifted from evidence generation to content development along with increased efficiency (**Figure 6**).

Figure 6. Comparison of effort

- Evidence generation
- Content development
- Quality control

Conclusions

HEOR professionals face significant challenges regarding how to efficiently assess a higher volume of evidence while employing rigorous review methods, addressing an emerging requirement to support Living HTAs. This case study demonstrates the value of an MLT-aided Living Reference tool to support rapid GVD updates.

References

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2. Kirwin, Erin, Jeff Round, Ken Bond, and Christopher McCabe. "A Conceptual Framework for Life-Cycle Health Technology Assessment." *Value in Health* 25, no. 7 (July 1, 2022): 1116–23.
3. Weeks, L, J Kim, C Lachance, and E Carson. "A Living Systematic Review to Support Health Technology Assessment: The CADTH Experience." *Cochrane Colloqium Abstracts*, 2020.

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Abbreviations/Glossary: GVD, global value dossiers; HTA, health technology assessment; MLT, machine-learning technologies; MM, Multiple Myeloma; TRMM, Triple Refractory Multiple Myeloma

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