



LIKELIHOOD RATIO IN SYNTHESIS REPERTORY - A CONCEPTUAL INTEGRATION MODEL WITH RUBRIC GRADING

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ABSTRACT Repertory is a cornerstone tool in homeopathic practice, providing a structured pathway from symptoms to remedy selection. Traditionally, rubric grading has been a qualitative and somewhat subjective process, initiated by Boenninghausen through typographic distinctions, later modified and systematized by many masters in homeopathy including Kent, and further expanded in repertoires such as Synthesis. With the growing demand for evidence-based approaches in medicine, there is a need to integrate statistical models into repertory analysis. The likelihood ratio (LR), a widely used concept in diagnostic medicine, quantifies the strength of an observed finding in supporting or refuting a diagnosis. Applying this to repertory, LR can conceptually be mapped onto rubric grading, where higher rubric grades may be seen as stronger indicators (higher LR) of a remedy's probability. This allows homeopathy to "speak the same language" as diagnostic tests in conventional practice. This review explores the foundations of rubric grading, introduces the concept of LR in simple terms, and proposes a conceptual integration model that aligns rubric grades with likelihood ratios. The proposed model aims to enhance objectivity, strengthen the scientific standing of repertory, and open future avenues for empirical validation in clinical practice.

KEYWORDS : Evidence-based homeopathy, Likelihood ratio, repertory, rubric grading, synthesis repertory

INTRODUCTION

Repertory is the logically and systematically arranged index to symptoms of the homeopathic materia medica, where rubrics serve as the repertorial language to depict symptoms. It forms the backbone of homeopathic clinical decision-making by aiding in remedy selection. Among them, the Synthesis Repertory, an expanded version of Kent's repertory, is one of the most widely used due to its comprehensive structure and adaptability to software platforms^[1,2]. Despite its utility, repertory analysis largely remains a qualitative process, with rubric grading based on typographic distinctions rather than statistical validation. This lack of numerical rigor introduces subjectivity, making remedy selection partially dependent on practitioner interpretation.

Modern medicine increasingly emphasizes evidence-based methods, where statistical tools such as likelihood ratios (LRs) have become central in diagnostic and prognostic reasoning^[3]. By quantifying how strongly a clinical finding supports a particular diagnosis, LR provides an objective framework for decision-making. Translating this approach to repertory analysis offers a novel opportunity to enhance objectivity, reduce practitioner bias, and strengthen the scientific credibility of homeopathy.

The present review introduces a conceptual integration model that maps the rubric grading system of the Synthesis Repertory into likelihood ratios, thereby proposing a probability-based approach to repertorial analysis.

Background**Rubrics Grading In Synthesis Repertory:**

The Synthesis Repertory (Repertorium Homoeopathicum Syntheticum), compiled by Frederik Schroyens, is an enlarged version of Kent's repertory and widely used in both print and software (Radar) formats due to its comprehensive structure and frequent updates. In this repertory, remedies are distributed across four grades:

First grade- in capital bold prints - 4 marks; second- bold- 3 mark, third- italics- 2 mark, and fourth- roman- 1 mark, reflecting their relative clinical reliability and frequency of confirmation in practice. This gradation indicates the intensity of a remedy's presence in a rubric and its degree of confirmation in literature and provings^[1,2].

Limitation Of Traditional Grading:

Traditional grading in repertoires including in Synthesis, though systematic, has notable limitations. It primarily relies on typographic distinctions without statistical rigor, making the grading qualitative rather than evidence-based. Remedy weightage is often practitioner-dependent and it relies on the practitioner's clinical judgment, based on historical usage or expert consensus rather than validated data. Moreover, the system cannot quantify the actual strength of evidence for a remedy-rubric relationship, leading to possible over- or under-representation of remedies. While effective in practice, the absence of quantitative measures introduces subjectivity.

In Synthesis repertory, grading from 1 to 4 represents a qualitative, ordinal scale. These grades rank the relative intensity of remedy confirmation but do not indicate how much more powerful one grade is compared to another; they tell us only the order, not the proportional strength^[1,3,4].

Likelihood Ratio (LR) In Statistics

In medical statistics, LR is defined as the ratio of the probability of a given clinical finding occurring in individuals with the disease compared to those without it. Two measures are commonly used: the positive (LR+) = Sensitivity / (1 – Specificity) and the negative (LR–) = (1 – Sensitivity) / Specificity. The interpretation is straightforward: LR > 1 increases the post-test probability of disease, LR = 1 indicates no diagnostic value, and LR < 1 decreases the probability. This makes LR a valuable statistical tool for evidence-based clinical decision-making^[5,6].

Previous Attempts In Homoeopathy

Early efforts to bring statistical methods into homeopathy included attempts at clinical validation of rubrics by Van Haselen and Fisher, and later by the ICCH working groups, who emphasized evidence-based repertory improvement^[7,8]. The most significant contributions came from Rutten and colleagues, who applied LR and Bayes' theorem to repertory rubrics, showing that only about 44% of rubric-remedy links were empirically supported. These studies marked the beginning of integrating statistical rigor into repertory construction^[3,4].

**Methods- Conceptual Integration Model
Rubric System in Synthesis Repertory (Table-1)**

Grade	Intensity/importance	Conceptual meaning
1	Most intense	Strongest evidence for a remedy
2	Moderate to high	Good evidence
3	Moderate	Weak to moderate evidence
4	Mild	Weakest evidence

Conceptual LR Assignment (Table-2)

Grade	Intensity/importance	Assigned LR (conceptual)
1	Most intense	10
2	Moderate to high	5
3	Moderate	2
4	Mild	1.2

Justification: LR>10 represents strong evidence, LR around 1 is neutral, and LR < 1 decreases probability^[6].

Step-by-Step Computational Procedure**Step 1: Identify Rubrics For A Case**

For demonstration, assume three symptoms are selected (Symptom 1, Symptom 2, Symptom 3), each corresponding to rubrics in Synthesis with defined grades.

Step 2: Assign LR Values Per Rubric

Two hypothetical remedies (A and B) are covered under these rubrics. Their respective grades are converted into LR values.

LR Values Assigned To Remedies Per Rubric (Table-3)

Remedy	Symptom 1 (Grade 1)	Symptom 2 (Grade 2)	Symptom 3 (Grade 3)
A	10	5	1 (absent)
B	2	5	2

Step 3: Compute Cumulative LR

Assuming independence of rubrics, the cumulative LR is calculated as the product of all LRs:

Cumulative LR=

Remedy A= $10 \times 5 \times 1 = 50$

Remedy B= $2 \times 5 \times 2 = 20$

Step 4: Convert To Post Test Probability

Using Baye's Theorem:

Pre-test probability (Ppre) = 0.10 (10%)

Pre-test odds (Opre) = $Ppre / (1 - Ppre) = 0.10 / 0.90 = 0.1111$

Post-test odds (Opost) = Opre $\times$ Cumulative LR

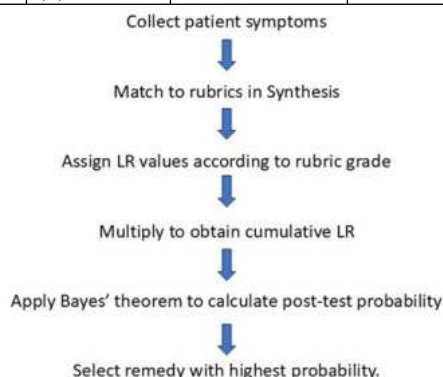
Post-test probability (Ppost) = $Opost / (1 + Opost)$

Remedy A: Opost = $0.1111 \times 50 = 5.5555 \rightarrow Ppost \approx 84.8\%$

Remedy B: Opost = $0.1111 \times 20 = 2.222 \rightarrow Ppost \approx 68.9\%$

Step 5: Tabulated Results (Table-4)

Remedy	Rubric LRs	Cumulative LR	Post Test Probability
A	10,5,1	50	84.8%
B	2,5,2	20	68.9%



Conceptual Flow Of Model (Figure-1)

DISCUSSION

The integration of LR into repertorial analysis represents a novel approach that distinguishes this conceptual model from earlier attempts in homeopathy. Previous works on statistical applications in repertory analysis have primarily emphasized remedy confirmation or rubric elimination without providing a rigorous numerical framework for grading intensity^[9,10]. In contrast, the present framework systematically translates the four-grade system of the Synthesis Repertory into quantitative likelihood ratios, thereby enabling direct probabilistic interpretation. This model is unique because it demonstrates that rubric grades, which are traditionally ordinal and qualitative, can be conceptualized as probability multipliers. In the repertory, remedies are arranged in four grades: Grade 1, Grade 2, Grade 3, and Grade 4. However, these gradings only indicate order, not proportional strength. By applying likelihood ratios, the distinction between grades is numerically defined: for example, a Grade 1 rubric may increase the likelihood of a remedy being indicated by five to ten times, while a Grade 3 rubric may only double it. This quantitative assignment provides proportional weightage and prevents the over or under valuation of certain rubrics.

Several advantages emerge from this framework. First, it allows remedies to be ranked numerically, even when they share high intensity rubrics, by integrating cumulative contributions of Grades 2-4. Second, it brings objectivity and statistical rigor, reducing practitioner-dependent variability in repertorial interpretation. Third, it minimizes bias from remedies that appear in multiple low-grade rubrics, ensuring that remedies with fewer but decisive high-grade rubrics retain their true clinical significance. Fourth, it aligns homeopathy with evidence-based medicine by adopting LRs, which

are already widely applied in diagnostic and prognostic testing across conventional discipline^[5,6]. Overall, this conceptual integration model transforms repertorial analysis from a qualitative, ordinal process into a probability-based quantitative system, enabling more reliable differentiation of remedies and enhancing the scientific credibility of homeopathic research, and this remains unique and relatively unexplored; very few publications have applied LR directly to repertory analysis, with most focusing instead on materia medica or clinical verification. Hence, this work represents one of the first conceptual integration models applied to Synthesis Repertory, increasing its potential impact and citation value.

Future Scope

his conceptual model offers several promising directions for future research. First, it bridges homeopathy and modern evidence-based medicine: since likelihood ratios are already a gold-standard tool in diagnostics and prognosis, applying them to repertory grading translates homeopathic concepts into a universally accepted scientific framework, thereby enhancing credibility in interdisciplinary and academic settings. Second, it adds objectivity to the Synthesis Repertory grading. While the current 1- 4 scale is ordinal and shows only order of importance, LR converts these into quantitative weights, reducing bias and enabling clearer differentiation between remedies when rubrics overlap. Third, it improves teaching and learning by answering common student queries such as how much more important a Grade 1 rubric is compared to Grade 3 through numerical clarity, making repertory more standardized for both undergraduate and postgraduate levels. Fourth, it addresses practical challenges in repertorization: remedies with multiple low-grade rubrics often overshadow those with fewer but stronger rubrics, but the LR model restores proportional balance.

Limitations

The LR values currently assigned to rubric grades are hypothetical and not derived from empirical clinical data. The model assumes independence of rubrics, whereas in practice some symptoms may be correlated, potentially inflating cumulative LRs. Moreover, the translation of qualitative gradings into numerical likelihoods requires future validation through prospective studies and outcome analyses. Thus, while this framework establishes a bridge between homeopathy and modern statistical methodology, its present utility is primarily conceptual, with clinical validation being an essential next step

CONCLUSION

This review highlights a novel conceptual model that integrates likelihood ratios into rubric grading of the Synthesis Repertory. By assigning quantitative values to traditional ordinal grades, the framework transforms repertorial analysis into a probability-driven process, enhancing objectivity and aligning homeopathy with evidence-based standards. While current LR values remain hypothetical, the model opens a new pathway for empirical validation and future clinical research, marking an important step toward scientific modernization of repertory use.

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