



MedRigor Research

Independent medical research quality assurance

SYNTHETIC COMPREHENSIVE AUDIT

Pre-submission quality audit

A demonstration of how MedRigor can organize methodological, statistical, reporting, evidence, integrity, journal-readiness, and reproducibility findings before submission.

Fictional manuscript used for demonstration

Remote weight monitoring after discharge and 30-day readmission in adults with heart failure: a retrospective cohort study

Reference	MR-SAMPLE-001
Review type	Comprehensive quality audit
Review status	Demonstration only - no real study reviewed
Prepared	21 August 2026

SCOPE AND INTERPRETATION

How to read this sample

This document demonstrates the structure and level of prioritization MedRigor can use. A real engagement would be governed by a written scope, the files actually supplied, the available expertise, and the target journal's current instructions.

Important sample limitation

Every manuscript detail, number, author circumstance, and finding below is fictional. No patient or participant data were used. This sample is not evidence of publication outcomes and is not clinical advice.

Illustrative material reviewed

Item	Illustrative status	Audit use
Manuscript	Version 0.9; 3,240 words	Main source for design, methods, results, and claims
Tables and figure	Table 1 and cohort-flow Figure 1	Denominators, balance, and presentation checks
Analysis note	Two-page fictional summary	Model specification and missing-data description
Target journal	General cardiology journal; no named journal	Generic readiness only; current author guide not checked

Severity scale

Level	Meaning	Expected response
CRITICAL	A credible risk to validity, integrity, safety, or usability that blocks submission readiness.	Resolve before submission; specialist or governance input may be needed.
MAJOR	A substantial weakness that could change interpretation or trigger major reviewer concern.	Address before submission and document the decision.
MODERATE	A meaningful reporting, clarity, evidence, or compliance gap.	Revise where feasible; explain any justified exception.
MINOR	A localized improvement with limited effect on the central interpretation.	Correct during final quality control.

Severity is a prioritization aid, not a numeric quality score. An item marked 'not assessed' should never be interpreted as passed.

EXECUTIVE SYNTHESIS

Major revision recommended before submission

The fictional manuscript presents a relevant clinical question and a potentially useful cohort. However, exposure timing, confounding control, outcome definition, effect reporting, and reproducibility details require resolution before journal submission.

Review domain	Status	Primary reason
Research question and design	Major concerns	Exposure timing and confounding strategy need clarification
Statistical methods and reporting	Major concerns	Effect measure interpretation, uncertainty, and missing data
Manuscript structure and clarity	Moderate concerns	Outcome and denominator inconsistencies
Evidence and reference integrity	Moderate concerns	One key claim is not supported by its cited source
Originality and responsible AI use	Not assessed	No similarity report, source corpus, or AI-use statement supplied
Journal compliance	Partially assessed	No named target journal or current author guide supplied
Reproducibility	Major concerns	Model specification and analysis materials are incomplete

Five actions with the highest leverage

- 1 Define the index date, monitoring activation window, and exposure classification consistently; test sensitivity to delayed activation.
- 2 Rebuild or justify the confounding strategy using clinically relevant baseline severity, prior utilization, and balance diagnostics.
- 3 Choose one primary 30-day outcome and align the abstract, methods, tables, results, and conclusion.
- 4 Report absolute event counts and rates, adjusted effect estimates, 95% confidence intervals, and model diagnostics.
- 5 Provide a reproducible analysis specification, missing-data account, cohort flow, and clearly versioned tables and figures.

Illustrative positive features

The research question is stated clearly, the study design is named, the limitations section acknowledges residual confounding, and the conclusion avoids claiming causality. These strengths should be retained while the priority risks are corrected.

DETAILED FINDINGS

Design, methods, and outcome definition

F-01 MAJOR Study design

Exposure classification depends on a post-discharge activation window

Observation	The Methods define exposure as enrollment within 48 hours, while the analysis note classifies patients as exposed if monitoring became active within 72 hours. The index date and treatment of patients readmitted before activation are not stated.
Why it matters	A post-index requirement can misclassify early events and may introduce time-related bias. The direction and size of any bias cannot be determined from the supplied material.
Recommended action	Define the index date and exposure window prospectively in the manuscript. Show how early readmissions were classified. Add a sensitivity analysis using an exposure definition that does not require event-free follow-up.
Location	Methods: Study population and Exposure; analysis note: cohort construction

F-02 MAJOR Confounding

The adjustment set omits plausible severity and prior-utilization variables

Observation	The model includes age, sex, and diabetes, but the fictional Table 1 also contains ejection fraction, recent admission count, renal function, and discharge medication variables. No causal rationale or balance diagnostic is provided.
Why it matters	The monitored and unmonitored groups may differ in prognosis and capacity to engage with care. Inadequate adjustment could produce a misleading association.
Recommended action	State the causal estimand and justify covariate selection. Include clinically relevant pre-exposure variables, report missingness, and present balance diagnostics. Separate prespecified from exploratory models.
Location	Methods: Statistical analysis; Table 1; analysis note: model 2

F-03 MAJOR Outcome definition

The primary outcome changes between manuscript sections

Observation	The abstract specifies all-cause readmission within 30 days. The Methods define heart-failure-related readmission, while the Results headline uses a composite of readmission or emergency attendance.
Why it matters	Readers cannot identify the prespecified primary outcome, and selective emphasis cannot be excluded from the fictional materials.
Recommended action	Designate one primary outcome, define its ascertainment and time origin, and label other outcomes secondary or exploratory. Align every manuscript location and include all prespecified outcomes.
Location	Abstract: Objective and Results; Methods: Outcomes; Results: first paragraph

DETAILED FINDINGS

Statistics, reporting, and evidence

F-04 MAJOR Statistical reporting

An odds ratio is described as a percentage reduction in risk

Observation	The Results report an adjusted odds ratio of 0.72 without a confidence interval and describe this as a 28% reduction in readmission risk. Absolute group event counts are not provided.
Why it matters	Odds and risk are not interchangeable, particularly when an outcome is common. The estimate's precision and practical importance cannot be judged.
Recommended action	Report absolute counts and rates, the adjusted estimate with a 95% confidence interval, and a measure aligned with the stated estimand. Use language that matches the effect measure and observational design.
Location	Abstract: Results; Results: primary model; Discussion: first paragraph

F-05 MODERATE Missing data

Missingness and exclusions are not accounted for

Observation	The fictional manuscript states that complete-case analysis was used but does not report missing values by variable or group. The denominator changes from 612 in Figure 1 to 608 in the model table.
Why it matters	Unexplained exclusions can affect generalizability and bias. The analysis population cannot be reproduced from the current description.
Recommended action	Add a variable-level missingness table, explain the four-record difference, justify the selected method, and consider a sensitivity analysis appropriate to the amount and mechanism of missingness.
Location	Methods: Statistical analysis; Figure 1; Table 2 footnote

F-06 MODERATE Evidence integrity

A cited source does not support the mortality-benefit claim

Observation	The Discussion cites a remote-monitoring adherence study for the statement that monitoring reduces cardiovascular mortality. The cited article, as represented in this fictional sample, does not evaluate mortality.
Why it matters	The claim is stronger than the described evidence and could mislead readers about established benefit.
Recommended action	Replace the citation with directly supporting evidence or narrow the sentence to the outcome actually studied. Check the remaining high-impact claims at source level.
Location	Discussion: paragraph 3; Reference 18

REPORTING AND SUBMISSION READINESS

Checklist-led review

Because the synthetic study is an observational cohort, STROBE is the illustrative reporting framework. A real audit would use the current target journal instructions and any applicable extension or specialist guideline.

Readiness item	Sample status	Required action
Study design named in title or abstract	Present	Retain 'retrospective cohort study' consistently
Participant eligibility and selection	Partial	Add source population, exclusions, and dates
Variables and measurement	Partial	Operationalize exposure, outcome, and severity covariates
Bias and study size	Missing	Discuss key bias controls and explain available cohort size
Statistical methods	Major revision	Specify estimand, adjustment, missingness, sensitivity analyses, and software version
Participant flow and denominators	Inconsistent	Reconcile 612 versus 608 and show exclusions
Main results with precision	Missing	Add absolute results and 95% confidence intervals
Limitations and cautious interpretation	Partial	Expand residual confounding and avoid causal language
Funding, conflicts, ethics, and data availability	Placeholders	Complete accurate declarations before submission
Target journal author guide	Not assessed	Supply a named journal for a current requirements check

Authoritative frameworks used in this demonstration

STROBE Statement: reporting guidance for observational studies. [strobe-statement.org](https://www.strobe-statement.org)

EQUATOR Network STROBE record: study-type guidance and checklist links. equator-network.org/reporting-guidelines/strobe

ICMJE Recommendations: manuscript preparation and statistical reporting principles. [icmje.org/recommendations](https://www.icmje.org/recommendations)

Framework boundary

A reporting checklist supports complete reporting; it does not by itself establish that a study was well designed, correctly analyzed, ethically conducted, or suitable for publication. Those questions require separate judgment and, where applicable, specialist review.

PRIORITIZED REVISION PLAN

A practical sequence for the author team

This order prevents downstream rewriting before the design and analysis decisions are settled.

Order	Owner	Action	Completion evidence
1	Lead author and methodologist	Resolve exposure, index date, and primary outcome definitions	Versioned definitions used in protocol, code, tables, and text
2	Statistician	Specify estimand, adjustment set, missing-data approach, and sensitivity analyses	Signed-off analysis specification and model outputs
3	Statistician and lead author	Re-run analyses and reconcile all denominators	Reproducible results package and cohort flow
4	Author team	Revise abstract, methods, results, tables, and discussion	Consistent outcomes, estimates, uncertainty, and cautious claims
5	Evidence reviewer	Verify high-impact claims against cited sources	Claim-source log with resolved mismatches
6	Submission lead	Complete STROBE and target-journal package checks	Checklist, declarations, file set, and author-guide audit
7	Independent reviewer	Perform final coherence and response check	Closed action log with justified unresolved items

Not assessed in this synthetic sample

- Raw data integrity, source records, code execution, or independent result reproduction.
- Ethics approval, consent, data-protection compliance, authorship, conflicts, or institutional permissions.
- Text similarity, unattributed overlap, image manipulation, or responsible AI-use disclosure.
- A named journal's current author guide, article type, fees, file limits, or submission-system requirements.
- Clinical safety, treatment effectiveness, or suitability for patient care.

What a real scope would confirm

The accepted files, review domains, reviewer expertise, deliverables, exclusions, turnaround, fee, confidentiality terms, retention period, and follow-up allowance would be agreed before work begins.

Sample conclusion

The fictional manuscript is not submission-ready in its current form. The most important work is methodological and statistical rather than cosmetic. Once the exposure, outcome, confounding, and analysis decisions are resolved, the reporting and submission package can be revised efficiently.