NHOS Health-Tech Copywriting Integrity Checker™

A Framework for Evidence-Aligned Health Communication: Development and Design of the NHOS Health-Tech Copywriting Integrity Checker™

NHOS Labs, Inc. | Privacy-first health intelligence. Evidence-informed innovation.
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Language strength should not exceed evidence strength.

Abstract

Background

Health communication increasingly occurs through digital platforms, health applications, websites, social media, product interfaces, educational resources, and consumer-facing technologies. In these environments, written language influences how individuals interpret symptoms, understand health risks, evaluate interventions, and decide whether to seek professional care. Consequently, the distinction between evidence-supported communication and persuasive language that exceeds its evidentiary basis has become increasingly important.

Health-related communication is subject to heightened expectations concerning truthfulness, substantiation, and the avoidance of misleading claims. The U.S. Federal Trade Commission (FTC) emphasizes that objective health-related claims must have appropriate substantiation and that communicators must consider both express and implied claims conveyed to reasonable consumers.

Objective

NHOS Labs, Inc. developed the Health-Tech Copywriting Integrity Checker™ as an editorial screening framework to help health communicators identify potential mismatches between the strength of available evidence and the strength of language used to describe health-related information, products, services, interventions, or outcomes.

Framework

The framework is organized around a central Evidence-Language Principle: language strength should not exceed evidence strength. The Integrity Checker operationalizes this principle through seven editorial dimensions: Evidence & Sources; Claim Discipline; Causality & Scientific Reasoning; Clinical & Reader Safety; Emotional Responsibility; Copy Quality; and Final Editorial Review. The framework consists of a structured 40-item assessment designed to generate an overall Evidence Integrity Score, section-level assessments, qualitative findings, and editorial recommendations.

Intended Contribution

The framework is designed as an editorial governance and decision-support instrument rather than a clinical diagnostic system, scientific evidence-grading system, legal opinion, regulatory certification, or substitute for expert review. Its primary contribution is the operationalization of evidence-language alignment into a repeatable editorial workflow applicable before publication.

Conclusion

The NHOS Health-Tech Copywriting Integrity Checker™ provides a structured approach to identifying overstatement, unsupported certainty, causal overreach, safety concerns, and other forms of evidence-language misalignment in health communication. The framework establishes a foundation for future empirical validation, inter-rater reliability testing, and refinement of its scoring thresholds.

Keywords: digital health; health communication; medical writing; health technology; evidence-based communication; editorial governance; health literacy; scientific communication; claim substantiation

1. Introduction

Digital health has transformed how health information is produced, distributed, encountered, and interpreted.

Individuals increasingly encounter health-related information outside traditional clinical encounters. A health claim may appear on a mobile application's onboarding screen, a digital-health website, a search result, a social-media post, an educational article, a product description, an email campaign, or an interface intended to guide health-related behavior. The communication environment therefore forms part of the health-information infrastructure.

This creates an important editorial problem.

A statement can be technically derived from a scientific publication while still communicating a stronger conclusion than the underlying evidence supports. Similarly, a sentence may contain no explicit falsehood while creating an implied impression of certainty, causality, efficacy, safety, or clinical validation that is not justified by the evidence. The distinction between what evidence demonstrates and what language implies is therefore fundamental.

The FTC's Health Products Compliance Guidance illustrates the importance of this distinction in health-related communication. The agency emphasizes that marketers must consider both express and implied

claims and evaluate the overall impression communicated to consumers rather than examining isolated words or phrases. It further emphasizes that health-related claims require appropriate scientific substantiation and that the evidence must be relevant to the specific product and claim being made.

The problem extends beyond commercial communication.

Health communication may influence interpretation of symptoms, perceived urgency, expectations regarding treatment, perceptions of risk, and willingness to seek professional care. The World Health Organization identifies health communication as requiring information that is actionable, accessible, relevant, timely, understandable, and credible.

These requirements create a need for editorial processes that evaluate not only whether a source exists, but whether the language used accurately represents what the source can support.

NHOS Labs, Inc. developed the Health-Tech Copywriting Integrity Checker™ to address this specific problem.

The framework does not attempt to determine whether a medical claim is clinically true in isolation. Instead, it asks a narrower and operationally useful question:

> *Does the language used communicate a level of certainty, efficacy, causality, safety, or expectation that is proportionate to the available evidence?*

2. Problem Definition

2.1 The Evidence-Language Gap

Scientific evidence and consumer-facing language operate under different constraints.

Scientific literature frequently contains qualifications concerning study population; sample size; study design; comparator; duration; endpoint; statistical uncertainty; effect size; external validity; limitations; confounding; bias; generalizability; and whether findings establish association or causation.

Consumer-facing communication, by contrast, frequently rewards brevity, clarity, memorability, and persuasive force.

This creates an inherent translation problem:

- A study may report an association while marketing language states that an intervention "causes" an outcome.
- A preliminary finding may become "proven."
- A mechanistic hypothesis may become a statement of clinical benefit.
- A small or context-specific study may become a generalized claim.
- Traditional use may be presented in a manner that implies clinical efficacy.
- A statistically significant finding may be converted into a guaranteed individual outcome.

> The resulting communication may therefore become stronger during the transition from evidence → interpretation → copy.

The Integrity Checker was developed to introduce an explicit editorial control point into this transition.

2.2 The Risk of Misinterpretation

Health communication carries particular risks because inaccurate or exaggerated statements can influence health behavior.

Potential consequences include:

- Delayed or foregone professional medical care
- Inappropriate treatment substitution
- Unrealistic expectations of intervention outcomes
- Misinterpretation of symptoms
- False reassurance
- Unnecessary anxiety or distress
- Erosion of trust in health information
- Adverse health outcomes

The Integrity Checker identifies language whose interpretation could reasonably carry such consequences.

2.3 Health Literacy Considerations

Health literacy—the degree to which individuals can access, understand, and use information to make informed health decisions—represents another dimension of the problem.

Communication that is technically accurate but inaccessible may be as ineffective as communication that is accessible but inaccurate. The Integrity Checker therefore treats clarity and evidence integrity as complementary rather than competing goals.

3. Theoretical Foundation

3.1 The Evidence-Language Principle

The conceptual foundation of the Integrity Checker is the Evidence-Language Principle:

> **Principle:** *Language strength should not exceed evidence strength.*

This principle does not require health communication to be weak, vague, or unnecessarily technical. Instead, it requires proportionality.

The purpose is not to prescribe one universal vocabulary. Rather, it is to prevent the semantic escalation of evidence.

A useful conceptual model is: Evidence strength → Claim strength → Language strength

The framework proposes that these three levels should remain aligned.

When language becomes stronger than the claim warranted by the evidence, an evidence-language mismatch occurs.

3.2 Key Theoretical Constructs

The framework draws on several established theoretical constructs:

3.2.1 Evidence Hierarchy

Different types of evidence carry different inferential weight. Systematic reviews and meta-analyses generally provide stronger evidence than single randomized controlled trials, which generally provide stronger evidence than observational studies, which generally provide stronger evidence than mechanistic reasoning or expert opinion. Health communication should reflect these differences.

3.2.2 Causal Inference

Determining whether an association represents a causal relationship requires consideration of multiple factors, including temporality, consistency, specificity, plausibility, coherence, experimental evidence, and analogy. Communication should not present association as causation.

3.2.3 Generalizability and External Validity

Evidence generated in specific populations, settings, and conditions may not generalize to all populations, settings, and conditions. Communication should reflect these limitations.

3.2.4 Risk Communication

Effective risk communication requires accurate representation of probabilities, uncertainties, benefits, harms, and trade-offs. Communication should not obscure or minimize material risks.

3.2.5 Health Literacy

Health literacy encompasses the cognitive and social skills that determine an individual's motivation and ability to gain access to, understand, and use information to promote and maintain good health. Communication should be accessible without sacrificing accuracy.

3.3 Relationship to Regulatory Frameworks

The Integrity Checker is informed by, but distinct from, regulatory frameworks:

- FTC Health Products Compliance Guidance: The FTC requires health-related advertising claims to be truthful, not misleading, and supported by appropriate scientific evidence. The agency emphasizes that implied claims and overall consumer impression matter, not merely literal wording.
- FDA Regulations: The FDA regulates health claims for food, dietary supplements, drugs, and medical devices. These regulations provide specific requirements for claim substantiation and permissible claim types.

- WHO Health Communication Framework: WHO emphasizes communication that is actionable, accessible, relevant, timely, understandable, and credible.

The Integrity Checker combines these concerns into an editorial screening model focused specifically on evidence-language alignment.

4. Development Methodology

4.1 Development Objective

The primary development objective was to create a repeatable editorial screening process capable of identifying common evidence-alignment risks in health-related copy.

4.2 Design Requirements

The framework was designed around five requirements:

- **4.2.1 Evidence Sensitivity:** The assessment should distinguish between the existence of a citation and the appropriateness of that citation for the claim being made.
- **4.2.2 Claim Discipline:** The assessment should identify absolute, universal, guaranteed, exaggerated, or otherwise disproportionate language.
- **4.2.3 Scientific Reasoning:** The assessment should recognize common reasoning errors involving causality, association, mechanism, extrapolation, and generalization.
- **4.2.4 Reader Protection:** The assessment should identify language that could contribute to unsafe interpretation, inappropriate reassurance, treatment substitution, or delayed professional care.
- **4.2.5 Editorial Usability:** The framework should be usable by writers, editors, health-tech teams, and organizations without requiring the assessment itself to function as a clinical decision-making instrument.

4.3 Development Process

The framework was developed through a multi-stage process:

- **Stage 1: Problem Definition —** Identification of evidence-language misalignment as a distinct editorial problem in health communication.
- **Stage 2: Literature Review —** Review of literature on health communication, medical writing, health literacy, risk communication, claim substantiation, and scientific communication.
- **Stage 3: Framework Design —** Development of the seven-dimensional framework and 40-item assessment architecture.
- **Stage 4: Scoring Development —** Creation of the Evidence Integrity Score concept and scoring specifications.
- **Stage 5: Editorial Workflow Design —** Development of the eight-stage editorial workflow.
- **Stage 6: Internal Review —** Initial review by health communication and medical writing professionals.
- **Stage 7: Revision —** Refinement of dimensions, questions, and scoring based on review.
- **Stage 8: Publication —** Release of Version 2.0 as a white paper and development record.

5. Framework Architecture

The Integrity Checker consists of seven dimensions and 40 assessment questions. The seven dimensions represent complementary forms of editorial risk.

5.1 Dimension I: Evidence & Sources (Questions 1-5)

This dimension evaluates the relationship between a claim and the evidence cited or relied upon.

Key considerations include: Is evidence provided for material health claims? Are sources credible and appropriately authoritative? Are sources relevant to the specific claim? Does the evidence actually support the wording used? Is the evidence sufficiently current for the subject? Is the evidence appropriately represented? Are limitations or uncertainty communicated where material?

Specific Questions:

- Q1. Are substantive health claims supported by an appropriate source?
- Q2. Are the sources appropriate for the claims being made?
- Q3. Does each source actually support the specific claim being made?
- Q4. Have you checked whether the evidence is sufficiently current for the topic?
- Q5. Have you considered the strength and type of evidence behind important claims?

Rationale: A citation alone does not establish evidence alignment. A source may be scientifically credible while being irrelevant to the precise claim being communicated.

5.2 Dimension II: Claim Discipline (Questions 6-10)

Claim discipline concerns the precision with which a communicator translates evidence into a statement.

Key considerations include: Certainty language; Absolute language ("always," "never"); Guarantees ("guaranteed," "will"); Universality ("works for everyone"); Unsupported timelines ("works in X days"); Implied efficacy; Implied superiority; Implied clinical validation; Magnitude claims; Unsupported numerical claims; Qualification.

Specific Questions:

- Q6. Does the strength of your wording match the strength of the evidence?
- Q7. Have you reviewed absolute language such as: proven, guaranteed, always, never, cures, prevents, eliminates, will, completely, safe, risk-free?
- Q8. Does the copy distinguish between established findings and emerging or uncertain evidence?
- Q9. Have findings from specific populations, studies, or conditions been generalized to broader audiences?
- Q10. Are statistics, percentages, risk reductions, or effect sizes presented with enough context?

Rationale: High-risk expressions may include "cures," "guaranteed," "proven," "clinically proven," "works every time," "works in X days," "prevents," "eliminates," "completely safe," and "the best." The presence of such language does not automatically establish that a claim is false. Instead, it identifies language that requires a particularly strong evidentiary basis.

5.3 Dimension III: Causality and Scientific Reasoning (Questions 11-15)

One of the most important functions of the Integrity Checker is to distinguish different levels of scientific inference.

Key considerations include: Association vs. causation; Mechanism vs. clinical outcome; Laboratory finding vs. human benefit; Animal finding vs. human efficacy; Traditional use vs. demonstrated efficacy; Single study vs. established consensus; Statistical significance vs. meaningful individual benefit.

Specific Questions:

- Q11. Does the copy avoid treating correlation or association as proof of causation?
- Q12. Does the copy distinguish a proposed biological mechanism from a demonstrated clinical outcome?
- Q13. Where relevant, does the copy distinguish traditional or historical use from evidence of clinical efficacy?
- Q14. Are laboratory, cellular, animal, or other preclinical findings clearly distinguished from human clinical evidence?
- Q15. Are observational findings presented without implying that they establish causality?

Rationale: These transformations can occur unintentionally during copywriting. A scientific paper may identify a biological pathway through which an intervention could plausibly act. That mechanism, however, does not necessarily establish that the intervention produces a clinically meaningful outcome in humans. Likewise, an observational association does not by itself demonstrate that one variable caused another.

5.4 Dimension IV: Clinical and Reader Safety (Questions 16-21)

Health communication differs from ordinary commercial communication because an inaccurate or exaggerated statement can potentially influence health behavior.

Key considerations include: Does copy imply diagnosis? Does copy imply treatment? Does copy discourage professional care? Does copy create inappropriate reassurance? Does copy promise a clinical outcome? Does copy minimize material risks? Does copy omit important limitations? Does copy imply universal suitability? Does copy suggest professional evaluation is unnecessary? Does copy encourage substitution of a product or intervention for appropriate medical care?

Specific Questions:

- Q16. Could a reasonable reader interpret the copy as diagnosing a condition?
- Q17. Could a reasonable reader interpret the copy as individualized treatment advice?
- Q18. Does the copy imply that a specific intervention will produce a particular outcome for everyone?
- Q19. Are statements such as "safe," "natural," "no side effects," or "risk-free" appropriately qualified?
- Q20. Where relevant, are important limitations, contraindications, interactions, or populations requiring caution acknowledged?
- Q21. Does the copy clearly distinguish general educational information from individualized medical advice where necessary?

Rationale: The purpose is not to transform marketing copy into medical advice. Rather, it is to identify language whose interpretation could reasonably carry clinical consequences.

5.5 Dimension V: Emotional Responsibility (Questions 22-26)

Evidence integrity is not limited to factual accuracy. A communication can contain technically accurate statements while using fear, vulnerability, shame, urgency, or emotional pressure in ways that distort decision-making.

Key considerations include: Fear-based persuasion; Shame and stigma; Exploitation of vulnerability; Catastrophic framing; Unnecessary urgency; Manipulative emotional contrast; Dignity and respect; Inclusivity; Reader autonomy.

Specific Questions:

- Q22. Does the copy use fear, anxiety, shame, or uncertainty to pressure the reader?
- Q23. Does the copy exploit a reader's health concerns, desperation, grief, or uncertainty?
- Q24. Does the copy provide reassurance beyond what the evidence supports?
- Q25. Does the copy preserve the dignity and agency of the intended audience?
- Q26. Is the language respectful and appropriate for the intended audience without making unsupported assumptions?

Rationale: The purpose is not to eliminate emotion from health communication. Effective health communication may appropriately communicate urgency, concern, hope, empathy, or motivation. The editorial question is whether emotional framing supports understanding or substitutes for evidence.

5.6 Dimension VI: Copy Quality (Questions 27-34)

Evidence-aligned communication must also be understandable.

Key considerations include: Clarity; Readability; Audience fit; Jargon management; Specificity; Concision; Coherence; Tone; Organization; Unnecessary complexity; Persuasive effectiveness.

Specific Questions:

- Q27. Is it immediately clear who the copy is written for?
- Q28. Does the copy clearly address a meaningful reader need, question, or problem?
- Q29. Could a non-specialist understand the main message without sacrificing important accuracy?
- Q30. Have unnecessary clinical, scientific, or technical terms been removed or explained?
- Q31. Does the copy make specific, meaningful claims rather than relying on vague health language?
- Q32. Does the tone match the brand, audience, and seriousness of the subject?
- Q33. Does the copy persuade through relevance, clarity, credibility, and value rather than pressure?
- Q34. Does the call to action offer an appropriate next step without creating false urgency or unrealistic expectations?

Rationale: This dimension reflects an important principle of health literacy: information must not merely exist; people must be able to access, understand, and use it in making health decisions.

5.7 Dimension VII: Final Editorial Review (Questions 35-40)

The final dimension functions as an editorial control layer requiring four final audits:

- **5.7.1 Claim Audit:** Identify every material health-related claim.
- **5.7.2 Source Audit:** Determine whether each material claim has an appropriate evidentiary basis.
- **5.7.3 Representation Audit:** Determine whether the language accurately represents the strength and limitations of the evidence.
- **5.7.4 Reader-Risk Audit:** Determine whether a reasonable reader could interpret the content in a materially more certain, therapeutic, diagnostic, or reassuring manner than intended.

Specific Questions:

- Q35. Have you reviewed every substantive health claim individually?
- Q36. Can you trace important claims back to their underlying evidence?
- Q37. Does the final copy accurately represent what the evidence does—and does not—show?
- Q38. Have you removed language that makes the copy sound more certain than the evidence warrants?
- Q39. Would a reasonable reader understand the intended message without being materially misled?
- Q40. Would you be comfortable defending every substantive claim in the copy to an informed healthcare professional?

Rationale: This final layer is intentionally holistic. Health communication is interpreted as a whole rather than as isolated sentences.

6. The 40-Item Assessment Instrument

The seven dimensions collectively contain 40 assessment questions. The questions are designed to produce two forms of output:

- **Quantitative Output:** Overall Evidence Integrity Score; Dimension-level scores; Identified risk areas.
- **Qualitative Output:** Strengths; Review priorities; Recommended revisions; Unresolved evidence questions; Reader-safety considerations.

The 40-question structure provides a standardized editorial workflow while allowing the assessment to remain human-interpretable. The framework is intended to support editorial judgment rather than replace it.

Table 1: Complete 40-Item Assessment Instrument

Item	Dimension	Question	Response Options
Q1	Evidence & Sources	Are substantive health claims supported by an appropriate source?	Yes all claims are sourced; Mostly most claims are sourced; Partially some claims lack sources; No sources not yet identified; Not applicable
Q2	Evidence & Sources	Are the sources appropriate for the claims being made?	Strong; Generally appropriate; Mixed; Weak; No sources available
Q3	Evidence & Sources	Does each source actually support the specific claim being made?	Yes; Mostly; Some claims extend beyond the evidence; Uncertain; Not reviewed
Q4	Evidence & Sources	Have you checked whether the evidence is sufficiently current for the topic?	Yes; Mostly; Some sources may be outdated; No; Not applicable
Q5	Evidence & Sources	Have you considered the strength and type of evidence behind important claims?	Yes; Mostly; Not consistently; No
Q6	Claim Discipline	Does the strength of your wording match the strength of the evidence?	Consistently; Mostly; Some overstatement may exist; Significant review needed

Item	Dimension	Question	Response Options
Q7	Claim Discipline	Have you reviewed absolute language such as: proven, guaranteed, always, never, cures, prevents, eliminates, will, completely, safe, risk-free?	None used; Used appropriately and supported; Some require review; Several require review
Q8	Claim Discipline	Does the copy distinguish between established findings and emerging or uncertain evidence?	Yes; Mostly; Inconsistently; No
Q9	Claim Discipline	Have findings from specific populations, studies, or conditions been generalized to broader audiences?	No; Possibly; Yes - needs review; Uncertain
Q10	Claim Discipline	Are statistics, percentages, risk reductions, or effect sizes presented with enough context?	Yes; Mostly; Some context is missing; No statistics used; Not reviewed
Q11	Causality	Does the copy avoid treating correlation or association as proof of causation?	Yes; Mostly; Potential issue; Significant issue
Q12	Causality	Does the copy distinguish a proposed biological mechanism from a demonstrated clinical outcome?	Yes; Mostly; Potential issue; Not applicable

Item	Dimension	Question	Response Options
Q13	Causality	Where relevant, does the copy distinguish traditional or historical use from evidence of clinical efficacy?	Yes; Mostly; Potential issue; Not applicable
Q14	Causality	Are laboratory, cellular, animal, or other preclinical findings clearly distinguished from human clinical evidence?	Yes; Mostly; Potential issue; Not applicable
Q15	Causality	Are observational findings presented without implying that they establish causality?	Yes; Mostly; Potential issue; Not applicable
Q16	Safety	Could a reasonable reader interpret the copy as diagnosing a condition?	No; Possibly; Yes - revision needed
Q17	Safety	Could a reasonable reader interpret the copy as individualized treatment advice?	No; Possibly; Yes - revision needed
Q18	Safety	Does the copy imply that a specific intervention will produce a particular outcome for everyone?	No; Possibly; Yes
Q19	Safety	Are statements such as "safe," "natural," "no side effects," or "risk-free" appropriately qualified?	Yes; Mostly; Some require review; Not applicable

Item	Dimension	Question	Response Options
Q20	Safety	Where relevant, are important limitations, contraindications, interactions, or populations requiring caution acknowledged?	Yes; Partially; No; Not applicable
Q21	Safety	Does the copy clearly distinguish general educational information from individualized medical advice where necessary?	Yes; Mostly; Needs clarification; Not applicable
Q22	Emotional	Does the copy use fear, anxiety, shame, or uncertainty to pressure the reader?	No; Mildly; Yes - revise
Q23	Emotional	Does the copy exploit a reader's health concerns, desperation, grief, or uncertainty?	No; Possibly; Yes - revise
Q24	Emotional	Does the copy provide reassurance beyond what the evidence supports?	No; Possibly; Yes
Q25	Emotional	Does the copy preserve the dignity and agency of the intended audience?	Yes; Mostly; Needs improvement

Item	Dimension	Question	Response Options
Q26	Emotional	Is the language respectful and appropriate for the intended audience without making unsupported assumptions?	Yes; Mostly; Needs review
Q27	Copy Quality	Is it immediately clear who the copy is written for?	Yes; Mostly; No
Q28	Copy Quality	Does the copy clearly address a meaningful reader need, question, or problem?	Yes; Mostly; Weakly; No
Q29	Copy Quality	Could a non-specialist understand the main message without sacrificing important accuracy?	Yes; Mostly; Some jargon needs translation; No
Q30	Copy Quality	Have unnecessary clinical, scientific, or technical terms been removed or explained?	Yes; Mostly; Needs revision; Not applicable
Q31	Copy Quality	Does the copy make specific, meaningful claims rather than relying on vague health language?	Yes; Mostly; Needs improvement
Q32	Copy Quality	Does the tone match the brand, audience, and seriousness of the subject?	Yes; Mostly; Needs review

Item	Dimension	Question	Response Options
Q33	Copy Quality	Does the copy persuade through relevance, clarity, credibility, and value rather than pressure?	Yes; Mostly; Some pressure language; Excessively promotional
Q34	Copy Quality	Does the call to action offer an appropriate next step without creating false urgency or unrealistic expectations?	Yes; Mostly; Needs revision; No CTA
Q35	Final Review	Have you reviewed every substantive health claim individually?	Yes; Partially; No
Q36	Final Review	Can you trace important claims back to their underlying evidence?	Yes; Mostly; Some gaps remain; No
Q37	Final Review	Does the final copy accurately represent what the evidence does—and does not—show?	Yes; Mostly; Needs review; Uncertain
Q38	Final Review	Have you removed language that makes the copy sound more certain than the evidence warrants?	Yes; Mostly; Not yet
Q39	Final Review	Would a reasonable reader understand the intended message without being materially misled?	Yes; Probably; Uncertain; No

Item	Dimension	Question	Response Options
Q40	Final Review	Would you be comfortable defending every substantive claim in the copy to an informed healthcare professional?	Yes; Mostly; Not yet; No

7. Scoring Model

The framework defines an Evidence Integrity Score (EIS) on a 0-100 scale.

7.1 Conceptual Formula

$$EIS = (\Sigma w_i s_i / \Sigma w_i) \times 100$$

Where:
- s_i represents the normalized score assigned to assessment item i
- w_i represents the weighting assigned to assessment item i
- The resulting score is normalized to a 0–100 scale

7.2 Item Scoring

Each response option is assigned a weight based on its alignment with evidence integrity principles:

Table 2: Response Option Weights

Response Category	Weight
Yes	100
Mostly	80
Partially	60
Possibly	50
Mildly	40
Weakly	35
Some	40
Inconsistently	40

Response Category	Weight
Not yet	30
No	20
Not applicable	70
Not reviewed	30
Uncertain	40
No sources available	10
Significant issue	10
Needs revision	30
Excessively promotional	20
No CTA	20
Needs improvement	35
Needs review	30
Mixed	50
Weak	25
Potential issue	40
Some overstatement may exist	40
Some require review	40
Several require review	25
Some claims extend beyond the evidence	40
Some sources may be outdated	40
Some jargon needs translation	40
Some context is missing	40
Some pressure language	40
Some gaps remain	40

Important Note on Scoring Weights: The numerical response weights presented in Table 2 are development-stage heuristic weights established to operationalize editorial severity and are not empirically calibrated measurement coefficients. Their appropriateness will be evaluated during content validation, reliability testing, and subsequent psychometric validation. Until such validation is complete, the weights and resulting scores should be interpreted as editorial guidance rather than validated measurement parameters.

7.3 Dimension Scores

Each dimension score is calculated as the mean of its constituent item scores. Dimensions are weighted equally in the overall score calculation.

7.4 Missing Responses

If a response is missing, the item is excluded from scoring for that assessment. A minimum of 50% of items (20 of 40) must be completed to generate a valid score.

7.5 Score Interpretation Bands

The following score bands are provisional and intended for editorial guidance:

Table 3: Provisional Score Interpretation Bands

Score Range	Classification	Interpretation
90-100	Excellent	Strong evidence integrity; minor refinements may still be beneficial
75-89	Strong	Generally responsible communication; review recommended for specific claims
50-74	Needs Review	Several claims or formulations require examination before publication
25-49	High Risk	Substantial potential overclaiming or evidence misrepresentation
0-24	Critical	Significant revision required; contains serious evidentiary or safety concerns

Important Clarification: The Evidence Integrity Score measures how well a communication appears to align its language with its evidentiary basis under the framework. It does NOT measure clinical efficacy, clinical safety, scientific truth, regulatory compliance, or legal permissibility. A high EIS score indicates that the communication demonstrates evidence-language alignment according to the framework, not that the underlying product or intervention has been clinically validated, approved, or proven effective.

Provisional Status: These score bands are provisional and should be interpreted as editorial guidance rather than validated clinical thresholds. Empirical validation is needed to establish reliability and predictive utility. The specific score thresholds should be considered editorially useful approximations rather than precisely calibrated cutoffs.

7.6 Safety Item Weighting

Safety-related items (Q16-Q21) may be flagged independently of the overall score. A single safety concern can justify revision even when the overall score is high.

8. Editorial Output

8.1 What Is Being Done Well

This section identifies areas in which the communication demonstrates strong evidence alignment, appropriate qualification, clarity, and responsible framing.

- "Evidence is generally distinguished from inference"
- "The copy avoids obvious absolute outcome promises"
- "The reader is treated respectfully"
- "Technical concepts are translated into accessible language"

8.2 Review Before Publishing

This section identifies statements, sections, sources, or communication patterns requiring additional review.

- "Claim strength: Some statements may use stronger certainty than the evidence supports"
- "Source alignment: Some substantive claims should be checked against their underlying sources"
- "Clinical interpretation: Some sentences could be interpreted as treatment guidance"
- "Uncertainty: Consider explicitly qualifying preliminary or emerging findings"

8.3 Recommended Next Steps

This section provides actionable editorial recommendations.

- Reduce certainty where the evidence is preliminary
- Verify flagged claims against their primary sources
- Re-read the copy from the perspective of a non-specialist patient or consumer
- Add appropriate context to quantitative claims

- Replace absolute outcome claims with appropriately qualified language
- Ensure the copy clearly distinguishes educational information from diagnostic guidance

8.4 High-Priority Review

This section identifies urgent concerns requiring immediate attention.

- "Outcome promise: The copy implies a specific intervention will produce a particular outcome for everyone"
- "Diagnostic interpretation: The copy could be interpreted as diagnosing a condition"
- "Vulnerability: The copy may exploit a reader's health concerns or uncertainty"

9. Application Workflow

The proposed editorial workflow consists of eight stages:

- **Stage 1: Define the Communication —** Identify the content type, audience, product, intervention, and intended communication objective.
- **Stage 2: Extract Claims —** Identify all material health-related claims, including claims conveyed implicitly.
- **Stage 3: Map Evidence —** Identify the evidence supporting each material claim.
- **Stage 4: Evaluate Evidence Relevance —** Determine whether the evidence corresponds to the intervention, population, outcome, formulation, context, and claim.
- **Stage 5: Evaluate Language —** Assess whether certainty, causality, magnitude, timing, and efficacy language correspond to the evidence.
- **Stage 6: Assess Reader Risk —** Evaluate possible clinical, behavioral, emotional, and interpretive consequences.
- **Stage 7: Score and Revise —** Apply the 40-item assessment and implement recommended revisions.
- **Stage 8: Final Editorial Review —** Repeat the claim, source, representation, and reader-risk audits before publication.

This workflow converts the framework from a checklist into an editorial governance process.

10. Example of Framework Application

> ***Consider the statement:*** *"This natural intervention reduces anxiety in seven days."*

The statement contains several independent claims:

- The intervention has an effect
- The effect is reduction of anxiety
- The effect is causal
- The effect applies to the target reader
- The magnitude is sufficiently meaningful to describe as "reduces"

- The effect occurs within seven days
- The outcome can reasonably be expected

A reviewer applying the Integrity Checker would ask:

- What evidence supports the intervention?
- Was the evidence generated in humans?
- Was anxiety measured using a validated outcome?
- Was the study controlled?
- What population was studied?
- Was the same formulation used?
- Was the study duration seven days?
- Was the result clinically meaningful?
- Does the evidence establish causality?
- Does the evidence justify the generalization?
- Does the statement create an expectation of a predictable outcome?

A potentially more evidence-aligned formulation might be:

> *"Early research suggests this intervention may help support anxiety-related outcomes, although evidence is limited and individual responses may vary."*

Even this alternative would require verification against the underlying evidence. The framework therefore does not replace evidence review; it structures it.

11. Intended Users

- **11.1 Health-Tech Founders:** To review product descriptions, websites, launch materials, investor-facing health claims, and user-facing product language.
- **11.2 Medical and Health Writers:** To evaluate whether scientific findings have been accurately translated into accessible language.
- **11.3 Copywriters:** To identify persuasive language that may inadvertently exceed the evidentiary basis.
- **11.4 Editors and Content Strategists:** To establish a repeatable pre-publication review process.
- **11.5 Healthcare Organizations:** To introduce an additional editorial quality-control layer for patient-facing communication.
- **11.6 Digital-Health Product Teams:** To review onboarding, notifications, educational content, feature descriptions, and health-related interface copy.
- **11.7 Researchers and Science Communicators:** To translate research findings while maintaining appropriate scientific qualification.

12. Relationship to Existing Frameworks

The Integrity Checker is not intended to replace existing scientific, clinical, regulatory, or editorial frameworks. Instead, it operates at the intersection of several established disciplines:

Evidence-based medicine; Scientific communication; Health literacy; Medical writing; Advertising substantiation; Risk communication; Editorial governance; Human factors; Digital health; Consumer health communication.

The FTC provides a relevant external context because its guidance requires health-related advertising claims to be truthful, not misleading, and supported by appropriate scientific evidence. It emphasizes that implied claims and overall consumer impression matter, not merely literal wording.

WHO's communication framework similarly emphasizes communication that is actionable, accessible, relevant, timely, understandable, and credible.

The NHOS framework combines these concerns into an editorial screening model focused specifically on evidence-language alignment.

13. Distinguishing Editorial Integrity from Regulatory Compliance

A critical design decision was to avoid representing the Integrity Checker as a regulatory compliance instrument.

The framework does NOT:

- Determine whether a product complies with U.S. law
- Determine whether an advertisement is legally permissible
- Provide legal advice
- Establish FDA approval
- Establish clinical efficacy
- Establish clinical safety
- Diagnose disease
- Prescribe treatment
- Independently verify every cited source
- Replace scientific peer review
- Replace clinical review
- Replace legal review
- Guarantee that communication will not be misleading

Regulatory compliance depends on jurisdiction, product category, intended use, claims, evidence, audience, presentation, and other facts. The framework instead provides an editorial risk-screening layer.

This distinction is essential to prevent misuse.

14. Limitations

- **14.1 Lack of Empirical Validation:** The current framework represents a formally developed editorial model but should not be described as psychometrically validated until empirical studies establish its reliability and validity.
- **14.2 Reviewer Subjectivity:** Some assessment questions necessarily involve professional judgment. Two reviewers may reasonably disagree about whether a claim is sufficiently qualified.
- **14.3 Domain Dependence:** Evidence standards differ among clinical specialties and health domains. The appropriate evidence for a behavioral intervention may differ substantially from the evidence required for a pharmaceutical intervention.
- **14.4 Dynamic Evidence:** Scientific evidence changes. A claim that is appropriately framed today may require revision following new evidence.
- **14.5 Context Dependence:** Words cannot always be evaluated independently from surrounding content. Headlines, imagery, testimonials, interface design, disclaimers, and calls to action can change the overall interpretation of a communication.
- **14.6 No Automatic Truth Determination:** The framework evaluates evidence-language alignment. It does not independently establish whether an underlying scientific proposition is true.
- **14.7 Provisional Scoring Thresholds:** The current score bands should be considered editorially useful but provisional until validated against independent reviewer judgments and relevant communication outcomes.
- **14.8 Heuristic Scoring Weights:** The numerical response weights are development-stage heuristic weights intended to operationalize editorial severity. They are not empirically calibrated measurement coefficients and require validation through content validation, reliability testing, and psychometric studies.

15. Validation Program

15.1 Phase I: Content Validation

Subject-matter experts independently review each assessment question for relevance, clarity, redundancy, completeness, construct alignment, and interpretability.

Objective: Establish that the instrument's content is appropriate for its intended purpose.

Method: Expert panel review using quantitative and qualitative methods.

15.2 Phase II: Inter-Rater Reliability

Multiple independent reviewers apply the framework to the same collection of health communications.

Objective: Assess consistency of scoring across reviewers.

Method: Calculate inter-rater reliability coefficients (e.g., Cohen's κ, ICC) and examine patterns of disagreement.

15.3 Phase III: Known-Groups Validity

The framework is applied to deliberately selected communications representing different levels of evidence alignment.

Objective: Test the hypothesis that communications independently judged to contain greater evidence-language risk receive lower Integrity Checker scores.

Method: Compare scores across groups using appropriate statistical tests.

15.4 Phase IV: Construct Validity

Relationships between Integrity Checker scores and theoretically related constructs are examined.

Objective: Determine whether the instrument behaves as theoretically expected.

Potential constructs: Claim certainty, evidence quality, reader interpretation, perceived credibility, perceived risk, perceived clinical authority.

15.5 Phase V: Reader Interpretation

Experimental studies determine whether evidence-aligned revisions reduce the likelihood that readers infer unsupported certainty, efficacy, or clinical validation.

Objective: Demonstrate practical utility in improving reader comprehension and reducing misinterpretation.

Method: Randomized controlled trials comparing reader responses to original and revised communications.

15.6 Phase VI: Prospective Implementation

Health-tech organizations implement the framework in real editorial workflows and evaluate outcomes.

Objective: Assess practical utility, usability, and impact on communication quality.

Outcome measures: Revision rates, unsupported claims, editorial review time, expert escalation, reader comprehension, perceived credibility.

16. Intended Contribution

- **16.1 Conceptual Contribution:** The framework defines evidence-language alignment as an explicit editorial quality dimension in health-tech communication.
- **16.2 Methodological Contribution:** The framework provides a structured seven-dimension, 40-item assessment for identifying evidence-language mismatches.
- **16.3 Practical Contribution:** The framework provides communicators with an actionable pre-publication workflow that connects claims, evidence, scientific reasoning, reader safety, emotional responsibility, and copy quality.

17. Future Research

Future research should investigate whether the Integrity Checker produces consistent judgments across reviewers, health domains, content types, and levels of evidence.

Additional research should examine whether higher Integrity Checker scores correspond with:

- More accurate reader interpretation
- Lower perceived certainty when evidence is uncertain
- Improved comprehension
- Reduced inference of unsupported efficacy
- Improved recognition of evidence limitations
- Greater trust without inappropriate increases in perceived clinical authority

Research should also investigate whether automated implementations can reproduce expert judgments without introducing new forms of bias or false confidence.

The framework should therefore be viewed as a starting methodological contribution rather than a completed scientific validation program.

18. Governance Principles

- **Principle 1: Evidence Before Persuasion —** Persuasive language must remain bounded by the evidence supporting it.
- **Principle 2: Specificity Before Generalization —** Claims should remain specific to the population, intervention, outcome, and conditions supported by evidence.
- **Principle 3: Qualification Where Uncertainty Matters —** Material uncertainty should be communicated rather than concealed.
- **Principle 4: Causality Requires Evidence —** Mechanistic plausibility, association, and temporal sequence should not automatically be presented as causation.
- **Principle 5: Reader Safety Matters —** Communication should account for foreseeable misinterpretation and potential behavioral consequences.
- **Principle 6: Editorial Screening Is Not Clinical Certification —** The framework supports responsible communication but does not replace expert, clinical, scientific, legal, or regulatory review.

19. Ethical Considerations

The development of health-communication tools creates an ethical responsibility to avoid creating a false appearance of certainty.

An integrity framework should therefore not become a mechanism through which organizations obtain a high score and subsequently imply that their communication is clinically validated.

An Integrity Checker score should never be represented as proof of clinical efficacy, safety, regulatory compliance, or scientific truth.

The tool's value lies in identifying potential weaknesses in communication and directing appropriate human review.

This distinction protects both communicators and readers.

20. About NHOS Labs, Inc.

NHOS Labs, Inc. is a health-technology organization developing privacy-first health-intelligence systems and evidence-informed digital health infrastructure.

Its work encompasses health intelligence, clinical informatics, evidence organization, health information systems, health tracking, and responsible health communication.

The NHOS Health-Tech Copywriting Integrity Checker™ extends this work into the editorial governance layer of digital health by providing a structured approach to evidence-language alignment.

21. Development and Validation Status

Table 4: Development and Validation Status

Component	Current Status
Evidence-Language Principle	Developed
Seven-dimensional framework	Developed
40-item assessment architecture	Developed
Evidence Integrity Score concept	Developed
Editorial interpretation bands	Provisional
Editorial workflow	Developed
Use-case framework	Developed
Expert content validation	Future research
Inter-rater reliability	Future research
Construct validation	Future research
Reader-interpretation testing	Future research
Prospective implementation study	Future research

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23. Declaration of Scope

This white paper describes the conceptual design and intended application of the NHOS Health-Tech Copywriting Integrity Checker™.

The framework is not presented as clinically validated, psychometrically validated, legally certified, FDA-approved, or regulatory-approved.

The Evidence Integrity Score and associated interpretation bands are intended for editorial screening and should not be interpreted as measures of clinical efficacy, clinical safety, regulatory compliance, or scientific truth.

Use of the framework does not eliminate the need for appropriate scientific, clinical, legal, regulatory, or subject-matter-expert review.

24. Suggested Citation

NHOS Labs, Inc. (2026). A Framework for Evidence-Aligned Health Communication: Development and Design of the NHOS Health-Tech Copywriting Integrity Checker™ (Version 2.0). NHOS Labs, Inc.

25. Publication Record Recommendation

The strongest scholarly record for this work is to maintain two distinct versions:

- **Version A NHOS White Paper:** The present document, publicly released by NHOS Labs, Inc. as the authoritative development record.
- **Version B Peer-Reviewed Manuscript:** A journal-specific manuscript that adds empirical validation as soon as the 40-item instrument has been independently evaluated.

This distinction matters because a DOI or public white paper establishes documented precedence and dissemination, whereas peer review establishes a separate scholarly evaluation record.

26. Contact Information

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Appendix A: Complete 40-Item Assessment Instrument

(See Table 1 in Section 6)

Appendix B: Scoring Specifications

- **B.1 Item Weighting:** Each response option is assigned a weight as specified in Section 7.2. These weights are development-stage heuristic values and require empirical validation.

- **B.2 Dimension Calculation:** Dimension scores are calculated as the mean of constituent item scores.
- **B.3 Overall Score Calculation:** The overall Evidence Integrity Score is calculated as the weighted mean of dimension scores, with each dimension weighted equally.
- **B.4 Score Interpretation:** Score bands are as specified in Section 7.5. These bands are provisional and require empirical validation.
- **B.5 Missing Data:** If a response is missing, the item is excluded from scoring for that assessment. A minimum of 50% of items (20 of 40) must be completed to generate a valid score.

Appendix C: Editorial Workflow Checklist

Stage 1: Define the Communication

- Identify content type
- Identify audience
- Identify product/intervention
- Define communication objective

Stage 2: Extract Claims

- Identify all material health-related claims
- Identify implied claims
- Categorize claims by type

Stage 3: Map Evidence

- Identify evidence for each claim
- Categorize evidence by type and strength
- Note evidence gaps

Stage 4: Evaluate Evidence Relevance

- Check intervention match
- Check population match
- Check outcome match
- Check formulation match
- Check context match

Stage 5: Evaluate Language

- Check certainty language
- Check causality language
- Check magnitude language
- Check timing language
- Check efficacy language

Stage 6: Assess Reader Risk

- Evaluate clinical consequences
- Evaluate behavioral consequences
- Evaluate emotional consequences
- Evaluate interpretive consequences

Stage 7: Score and Revise

- Complete 40-item assessment
- Calculate Evidence Integrity Score
- Implement recommended revisions
- Re-score as needed

Stage 8: Final Editorial Review

- Claim audit completed
- Source audit completed
- Representation audit completed
- Reader-risk audit completed

Version History

Version	Date	Changes
1.0	August 2026	Initial release
2.0	August 2026	Added complete 40-item instrument; expanded scoring specifications; strengthened theoretical foundation; added editorial workflow; expanded references; added validation program; clarified scoring weight status

Summary of Key Improvements (Internal Note)

Issue	Resolution
Missing 40-item instrument	Added complete Table 1 with all items and response options
Scoring model not reproducible	Added full scoring specifications in Section 7 and Appendix B
References too narrow	Expanded to 20 scholarly references across relevant fields
Architecture image problematic	Removed—replaced with clear textual framework description
Validation status unclear	Added clear table and six-phase validation program
Theoretical foundation weak	Added Section 3 with key theoretical constructs
Editorial workflow missing	Added Section 9 and Appendix C
Readability improved	Clearer section organization, more consistent formatting
Scoring weights status unclear	Added explicit statement that weights are heuristic and require validation
EIS interpretation ambiguous	Added clarification that EIS measures evidence-language alignment, not clinical truth

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Methodological White Paper · Version 2.0 · August 2026
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