# Characterizing Major Issues in ClinicalTrials.gov Results Submissions

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## Background

- ClinicalTrials.gov provides public access to summary results for 27,000+ clinical studies.
- Before posting, results submissions are reviewed by ClinicalTrials.gov staff using standard review criteria to assess for apparent errors, deficiencies, or inconsistencies and to ensure complete, sensible entries that can be understood by readers of the medical literature.

## Objective

- To characterize the type and frequency of major issues identified in results submissions by ClinicalTrials.gov staff

## Study Design / Method

Initial results submissions 7/19/15 to 8/15/15 were reviewed per standard review procedures.

Second reviewer examined a convenience sub-sample of submissions with major issues to assess agreement with the reviewer and characterize the major issues identified.

## Findings

- 67% (240/358) results submissions from July 19, 2015 to August 15, 2015 had major issues.
- In convenience sub-sample of 215 submissions with major issues (47% = 101 industry, 53% = 114 non-industry):
  - 471 occurrences of 37 unique major issues
  - Mean (SD) = 2.2 (1.3) unique major issues per submission
    - 1.9 (1.2) for industry submissions
    - 2.5 (1.4) for non-industry submissions

## Major Issue Outcome Measure Examples

### 1. Invalid Unit of Measure

| | |
|---|---|
| Title: | Systolic Blood Pressure |
| Description: | |
| Time Frame: | 6 months |

| Arm/Group Title | Remuverol Low Dose | Remuverol High Dose |
|---|---|---|
| Number Analyzed | 2420 | 2364 |
| Mean (Standard Deviation) Unit of Measure: 142 | 140 (5) | 128 (10) |

**Suggested edit**: "mmHg"

### 2. Insufficient information about a scale

| | |
|---|---|
| Title: | PASI at 3 months |
| Description: | *[NO descriptive text provided]* |
| Time Frame: | 3 months |

| Arm/Group Title | Hypertena | Placebo |
|---|---|---|
| Number Analyzed | 150 | 148 |
| Mean (Standard Deviation) Unit of Measure: scores on a scale | 2.5 (5.2) | 7.6 (4.5) |

**Suggested edit**: "The Psoriasis Area and Severity Index (PASI) measures the severity of psoriasis, and ranges from 0 (no disease) to 72 (maximal disease)."

### 5. Unclear Outcome Measure

| | |
|---|---|
| Title: | Safety and Tolerability |
| Description: | *[NO descriptive text provided]* |
| Time Frame: | 1 year |

| Arm/Group Title | EnderG 25 mg | EnderG 50 mg | EnderG 100 mg |
|---|---|---|---|
| Number Analyzed | 6 | 6 | 7 |
| Measure Type: Count of Participants Unit of Measure: participants | 2 | 4 | 5 |

**Suggested edits**:
- Report as 2 separate outcome measures:
  1. Safety: "Number of participants with any treatment-related adverse event"
  2. Tolerability: "Number of participants with a dose-limiting toxicity"

### 8. Data with multiple Units of Measure

| | |
|---|---|
| Title: | Pharmacokinetics (Cmax, Tmax, AUC0-24) |
| Description: | |
| Time Frame: | Baseline to 90 days |

| Arm/Group Title | Vuxcluglyn |
|---|---|
| Geometric Mean (Standard Deviation) Unit of Measure: mg/dL, min, mg*h/dL | |
| Number Analyzed | 12 |
| Cmax | 350 (23) |
| Tmax | 93 (8) |
| AUC0-24 | 32550 (230) |

**Suggested edits**: Report as 3 separate outcome measures

## Table 1: Categories of Major Issues in Results Submissions

| Major Issue | Number (%) n=471 |
|---|---|
| 1. Invalid/inconsistent Unit of Measure | 86 (40%) |
| 2. Insufficient information about a scale used for assessment | 55 (26%) |
| 3. Internal inconsistency—inconsistency between information in different parts of the record | 52 (24%) |
| 4. Written results or conclusions | 47 (22%) |
| 5. Unclear Baseline or Outcome Measure | 44 (20%) |
| 6. Incorrect Measure Type | 23 (11%) |
| 7. "0" Participants at Risk for Adverse Events without explanation | 19 ( 9%) |
| 8. Data with multiple Units of Measure | 19 ( 9%) |
| 9. Multiple time points without an explanation | 15 ( 7%) |
| 10. Results not reported per arm | 14 ( 7%) |
| 11. Non-meaningful values included as "placeholder" data | 12 ( 6%) |
| 12. Adverse Events at Risk population inconsistent with other information in record | 12 ( 6%) |

## Conclusions

- 85% (398/471) occurrences of major issues could be described using only 12 categories.
- Further research is needed to confirm the generalizability of these findings.
- Aim to use findings to improve the validation process, develop targeted support materials, and improve results reporting on the platform.

## Disclosure

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All authors report working for ClinicalTrials.gov.

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