LabQAR: A Manually Curated Dataset for Question Answering on Laboratory Test Reference Ranges and Interpretation

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Lab Test Details Extraction Guidelines

Objective

To extract standardized metadata from lab test documents and encode them into a structured Excel format for two types of clinical question-answering (QA) datasets:

- Set 1: Reference range retrieval (open-ended)
- Set 2: Lab result classification (multiple-choice)

1. General Instructions

• Review each row in the source table (e.g., PDF or webpage).

• Annotate all relevant information per lab test, including units, reference ranges, and contextual conditions.

• Maintain consistency with terminology and formatting for downstream automation (e.g., JSON conversion).

• Use drop-down options or controlled vocabularies wherever available (e.g., 'Serum', 'Plasma', 'Male', 'Female', 'Child', 'Adult').

2. Required Metadata Fields to Annotate

Feature	Description	Example Value
Lab Test Name	Full name of the lab test	Acetaminophen (therapeutic)
Specimen Type	Biological sample used	Serum, Plasma
Gender	If reference ranges are gender-specific	Male, Female, Any

Age Group	If reference ranges vary by age	Adult, Child, Any
Measurement Units	Both Traditional and SI units	µg/mL, µmol/L
Reference Range	Traditional and SI reference intervals	70–200, <0.1
Conversion Factor	Factor between traditional and SI units	6.62
Test Conditions	Specific physiological or clinical conditions	Luteal phase, Fasting
Category	Type of lab test	Therapeutic Drug Monitoring
Source Reference	Source of extracted data	Laposata, ABIM

3. Special Handling Cases

• Multiple Specimens: Separate entries or note both specimens using a delimiter (e.g., 'Serum, Plasma')

• Range with '<' or '>' signs: Keep original format (e.g., '<0.1') and annotate carefully

• No SI Units: Leave blank or indicate 'N/A'

• Ambiguous Units or Ranges: Flag for discussion or verification

4. Generating QA Pairs

Set 1: Open-ended question (Reference Range Retrieval)

Template: For the lab test {Lab Test}, measuring in {SI Unit} in {Specimen} for {Gender}, age group {Age Group}, what is the correct lower and upper bound range values in SI reference range?

Answer: {SI Reference Range}

Set 2: Multiple-choice question (Lab Result Classification)

Template: For the lab test {Lab Test}, measuring in {SI Unit} in {Specimen} for {Gender}, age group {Age Group}, a value in SI reference range is {Value}. Is the lab test result normal, low, or high?

Choices: A. Normal, B. High, C. Low

Answer: (e.g., B)

5. Critical Annotation Examples

Lab Test	Specimen	Gender-specific	Age grou specific	Women-related condition	Types of reference range	Traditional Reference Interval	Traditior Units	Conversio Factor,	SI Reference Interval	SI Units
17α--Hydroxyprogesterone	Serum	Female	-	Follicular phase	Normal	15–70	ng/dL	0.03	0.4–2.1	nmol/L
Follicle--stimulating hormone (FSH	Serum	Female	-	Ovulatory phase	Normal	6.17–17.2	mIU/mL	1	6.1–17.2	IU/L
Alanine	Plasma	-	Adult	-	Normal	1.87–5.88	mg/dL	112.2	210–661	μmol/d

References

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