Clinical Research Appraisal Inventory (CRAI)

INSTRUCTIONS:

The following items are tasks related to performing clinical research. Please indicate your ability to successfully perform each task by selecting a single number from zero to ten that best describes your level of confidence. The phrases next to the numbers (0=No Confidence and 10=Total Confidence) are only guides. You can use these numbers or any of the numbers in between to describe your level of confidence.

We would like to know how confident you are that you can successfully perform these tasks TODAY.

1) GW ID number _____

Conceptualizing a Study

2) Select a suitable topic area for study.

☐ No confidence ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ Total confidence

3) Decide when to stop searching based on a literature review.

☐ No confidence ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ Total confidence

4) Refine a problem so it can be investigated

☐ No confidence ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ Total confidence

5) Decide when to quit searching for related research/writing

☐ No confidence ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ Total confidence

6) Develop a logical rationale for a particular research idea

☐ No confidence ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ Total confidence

7) Organize your proposed research ideas in writing.

☐ No confidence ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ Total confidence

8) Articulate a clear purpose for the research

☐ No confidence ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ Total confidence

9) Place one's study in the context of existing research and justify how it contributes to important questions in the area

☐ No confidence   ☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7   ☐ 8   ☐ 9   ☐ Total confidence

10) Explain (in a general way) the importance of theory to research

☐ No confidence   ☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7   ☐ 8   ☐ 9   ☐ Total confidence

11) Relate specific questions of interest to underlying theory

☐ No confidence   ☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7   ☐ 8   ☐ 9   ☐ Total confidence

Designing a Study

12) Compare major types of studies (such as case reports, case controls, cross-sectional, longitudinal and epidemiological studies, clinical trials, etc.)

☐ No confidence   ☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7   ☐ 8   ☐ 9   ☐ Total confidence

13) Recognize important threats to internal and external validity applicable to each research design

☐ No confidence   ☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7   ☐ 8   ☐ 9   ☐ Total confidence

14) Choose an appropriate research design that will answer a set of research questions and/or test a set of hypotheses

☐ No confidence   ☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7   ☐ 8   ☐ 9   ☐ Total confidence

15) State the purpose, strengths and limitations of each study design

☐ No confidence   ☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7   ☐ 8   ☐ 9   ☐ Total confidence

16) Design a study using qualitative methods, e.g. ethnography, grounded theory or phenomology

☐ No confidence   ☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7   ☐ 8   ☐ 9   ☐ Total confidence

17) Design a study using quantitative methods, e.g. experimental, quasi-experimental designs or clinical trials

☐ No confidence   ☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7   ☐ 8   ☐ 9   ☐ Total confidence

18) Determine the universe, population, and appropriate sample for a given study

☐ No confidence   ☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7   ☐ 8   ☐ 9   ☐ Total confidence

19) Determine an adequate number of subjects for your research project

☐ No confidence   ☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7   ☐ 8   ☐ 9   ☐ Total confidence

20) Select methods of data collection appropriate to the study population and variable(s) of interest.

☐ No confidence   ☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7   ☐ 8   ☐ 9   ☐ Total confidence

21) Determine how each variable will be measured

☐ No confidence ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ Total confidence

22) Select reliable and valid instruments to measure or assess variables

☐ No confidence ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ Total confidence

23) Design the best data analysis strategy for your study

☐ No confidence ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ Total confidence

Collaborating With Others

24) Identify experts in your area of interest

☐ No confidence ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ Total confidence

25) Consult senior researchers for ideas.

☐ No confidence ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ Total confidence

26) Identify faculty collaborators from within and outside the discipline who can offer guidance to the project.

☐ No confidence ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ Total confidence

27) Initiate research collaborations with colleagues.

☐ No confidence ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ Total confidence

28) Participate in generating collaborative research ideas.

☐ No confidence ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ Total confidence

29) Sustain effective collaborations.

☐ No confidence ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ Total confidence

30) Terminate a collaboration that isn't working.

☐ No confidence ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ Total confidence

31) Work interdependently in a research group

☐ No confidence ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ Total confidence

Funding a Study

32) Identify appropriate funding sources (local, state, national) to support a study

☐ No confidence ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ Total confidence

33) Speak with a person at the funding agency regarding your project or project ideas

☐ No confidence ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ Total confidence

34) Describe a major funding agency's (e.g. NIH, NSF, or foundation) proposal review and award process

☐ No confidence ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ Total confidence

35) Prepare a research proposal suitable for submission in one's research area.

☐ No confidence ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ Total confidence

36) Establish a sufficient timeline for a grant application.

☐ No confidence ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ Total confidence

37) Locate appropriate forms for a grant application

☐ No confidence ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ Total confidence

38) Prepare a project budget for a grant application.

☐ No confidence ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ Total confidence

39) Establish collaborator and consultant agreements for a grant application

☐ No confidence ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ Total confidence

40) Write a competitive grant application

☐ No confidence ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ Total confidence

41) Obtain necessary signatures for institutional approval of a grant application

☐ No confidence ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ Total confidence

Planning and Managing Your Research Study

42) Maintain an organized system for ideas and references

☐ No confidence ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ Total confidence

43) Develop plans for implementing a study, including timeline, budget and requirements for personnel, facilities and supplies

☐ No confidence ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ Total confidence

44) Adhere to a timeline for research projects.

☐ No confidence   ☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7   ☐ 8   ☐ 9   ☐ Total confidence

45) Maintain a log of your research process (experiments conducted, major decisions, analyses performed, etc.)

☐ No confidence   ☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7   ☐ 8   ☐ 9   ☐ Total confidence

46) Obtain or purchase appropriate supplies and equipment for a research study

☐ No confidence   ☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7   ☐ 8   ☐ 9   ☐ Total confidence

47) Prepare and submit required reports, budget requests and other documents to institutional administrators and funding agencies

☐ No confidence   ☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7   ☐ 8   ☐ 9   ☐ Total confidence

48) Recruit and screen research project staff.

☐ No confidence   ☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7   ☐ 8   ☐ 9   ☐ Total confidence

49) Set expectations and communicate them to project staff

☐ No confidence   ☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7   ☐ 8   ☐ 9   ☐ Total confidence

50) Train assistants to collect data

☐ No confidence   ☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7   ☐ 8   ☐ 9   ☐ Total confidence

51) Evaluate research project staff.

☐ No confidence   ☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7   ☐ 8   ☐ 9   ☐ Total confidence

52) Ask staff to leave the project team when necessary

☐ No confidence   ☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7   ☐ 8   ☐ 9   ☐ Total confidence

Protecting Research Subjects and Responsible Conduct of Research

53) Explain the historical events that had significant impact on the federal regulations for the protection of human subjects

☐ No confidence   ☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7   ☐ 8   ☐ 9   ☐ Total confidence

54) Identify the responsibilities of research institutions and regulatory agencies in conducting research

☐ No confidence   ☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7   ☐ 8   ☐ 9   ☐ Total confidence

55) Describe appropriate recruitment and retention methods used in clinical research

☐ No confidence   ☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7   ☐ 8   ☐ 9   ☐ Total confidence

REDCap

56) Apply the appropriate process for obtaining informed consent from research subjects

☐ No confidence ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ Total confidence

57) Write a human subjects consent form containing the appropriate elements.

☐ No confidence ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ Total confidence

58) Design a process utilizing special considerations for obtaining consent from vulnerable subjects

☐ No confidence ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ Total confidence

59) Describe ethical concerns with the use of placebos in clinical research

☐ No confidence ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ Total confidence

60) Discuss ethical issues involved in conducting genetic research

☐ No confidence ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ Total confidence

61) Explain the potential risks and other special considerations associated with behavioral research

☐ No confidence ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ Total confidence

62) Be knowledgeable and respectful of diverse ethical challenges associated with conducting research with minority populations

☐ No confidence ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ Total confidence

63) Describe circumstances when the HIPAA Privacy Rule applies to research

☐ No confidence ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ Total confidence

Collecting, Recording and Analyzing Data

64) State the relationship between the chosen research design, the type of data collected, and the necessary statistical techniques

☐ No confidence ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ Total confidence

65) Evaluate the reliability and validity of a given measurement

☐ No confidence ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ Total confidence

66) Ensure data collection is reliable across trials, raters, or equipment

☐ No confidence ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ Total confidence

67) Construct a plan for managing data files

☐ No confidence ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ Total confidence

REDCap

68) Organize data to store and analyze in a computer system

☐ No confidence ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ Total confidence

69) Analyze data according to their level of measurement and the research design

☐ No confidence ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ Total confidence

70) Avoid the violation of statistical asssumptions

☐ No confidence ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ Total confidence

71) Provide direction to computer specialists or statisticians on how to handle missing data.

☐ No confidence ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ Total confidence

72) Perform commonly used statistical tests, such as chi square, t-test, analysis of variance, correlations, and multiple regression

☐ No confidence ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ Total confidence

73) Perform more advanced statistical tests used in one's research area, such as discriminant analysis, principal components analysis, multiple logistic analysis, survival analysis or time series analysis

☐ No confidence ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ Total confidence

74) Use computer software to generate graphic images, such as flow charts or theoretical models

☐ No confidence ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ Total confidence

Interpreting Data

75) Explain the outcome of given analysis in terms of the originally stated hypotheses or research questions

☐ No confidence ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ Total confidence

76) Express appropriate methodological and theoretical cautions in interpreting results

☐ No confidence ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ Total confidence

77) Identify limitations of a study

☐ No confidence ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ Total confidence

78) Integrate the research findings into the existing literature by discussing what is known, unknown, and what requires further study

☐ No confidence ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ Total confidence

Reporting a Study

REDCap

79) Effectively edit your writing to make it logical and succinct.

☐ No confidence   ☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7   ☐ 8   ☐ 9   ☐ Total confidence

80) Cite strengths and limitations of a study based on the data

☐ No confidence   ☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7   ☐ 8   ☐ 9   ☐ Total confidence

81) Select a journal for a manuscript submission

☐ No confidence   ☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7   ☐ 8   ☐ 9   ☐ Total confidence

82) Organize a research report for a journal article according to an appropriate professional format and standards

☐ No confidence   ☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7   ☐ 8   ☐ 9   ☐ Total confidence

83) Write a literature review that critically synthesizes the literature relevant to your own research question

☐ No confidence   ☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7   ☐ 8   ☐ 9   ☐ Total confidence

84) Write a methods section that conveys sufficient methodological detail to permit subsequent replication of your work by others

☐ No confidence   ☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7   ☐ 8   ☐ 9   ☐ Total confidence

85) Write the results section of a research paper that clearly summarizes and describes the results, free of interpretative comments

☐ No confidence   ☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7   ☐ 8   ☐ 9   ☐ Total confidence

86) Report results in both narrative and graphic form

☐ No confidence   ☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7   ☐ 8   ☐ 9   ☐ Total confidence

87) Write a discussion section for a research paper that articulates the importance of your findings relative to other studies in the field.

☐ No confidence   ☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7   ☐ 8   ☐ 9   ☐ Total confidence

88) Prevent authorship disputes

☐ No confidence   ☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7   ☐ 8   ☐ 9   ☐ Total confidence

89) Describe the stages of a manuscript review

☐ No confidence   ☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7   ☐ 8   ☐ 9   ☐ Total confidence

90) Compose a reply to reviewers' comments for a manuscript review

☐ No confidence   ☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7   ☐ 8   ☐ 9   ☐ Total confidence

Presenting Your Study

91) Design visual presentations (posters, slides, graphs, pictures).

☐ No confidence ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ Total confidence

92) Orally present results at a regional or national meeting

☐ No confidence ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ Total confidence

93) Defend results to a critical audience

☐ No confidence ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ Total confidence

REDCap