Core Knowledge in Scholarly Activities

A. Principles of Biostatistics in Research
    1. Types of variables (eg, continuous, ordinal, nominal)
    2. Distribution of data (eg, mean, standard deviation, skewness)
    3. Hypothesis testing (eg, Type I and Type II errors, p-values, statistical power)
    4. Common statistical tests (eg, ANOVA, Chi-square, nonparametric tests)
    5. Measurement of association and effect (eg, correlation, relative risk, odds ratio)
    6. Regression (eg, linear, logistic, survival analysis)
    7. Diagnostic tests (eg, sensitivity and specificity, predictive values, disease prevalence, receiver operating characteristic (ROC) curves)
    8. Systematic review and meta-analysis
B. Principles of Epidemiology and Clinical Research Design
    1. Study design, performance, and analysis (internal validity)
    2. Generalizability (external validity)
    3. Bias and confounding
    4. Causation
    5. Incidence and prevalence
    6. Screening
    7. Cost benefit, cost effectiveness, and outcomes
    8. Measurement (eg, validity, reliability)
C. Ethics in Research
    1. Professionalism and misconduct in research (eg, conflicts of interest, falsification)
    2. Principles of research involving human subjects
    3. Principles of consent and assent
D. Quality Improvement
    1. Project design (eg, models, aims, key drivers, tools, Plan-Do-Study-Act (PDSA) cycle)
    2. Data and measurement (eg, outcomes, balancing measures, run charts, control charts, common cause and special cause variation)