Annex 1

Sample Design for COVID-19 Facilities vs non-COVID-19 Facilities

This cross-sectional study of health facility’s (HF) COVID-19 pandemic preparedness occurred from April 1, 2020, through May 31, 2020. Sampling was done based on the distribution of health facilities and certain selected categories of healthcare workers (HCWs) within those health facilities. Each healthcare worker provided informed consent prior to participating in the study. A multi-stage, stratified sampling design was done to obtain one (1) COVID-19 designated hospitals from each of the 19 Governorates matched to one (1) NonCOVID-19 Hospitals from each of those governorates. Then, two districts were selected (randomly) from each governorate to choose one Tertiary Hospital (irrespective of their COVID-19 status) per District. Since the Medical City in Baghdad is a different entity and does not fall under any governorate, one (1) COVID-19 designated hospital and one (1) NonCOVID-19 teaching hospital was taken from among the teaching hospitals in Medical City. The total sample size included 78 hospitals that included 31 COVID-19 hospitals and 47 NonCOVID-19 hospitals, including both general and tertiary hospitals. (Table 1) Randomly selecting two districts from which to match each COVID-19 designated hospital to a NonCovid-19 facility per governorate ensured controls for variability of demographics, rural populations, impact of conflict and recovery stage and patients per hospital allocation per district facility. The proportion of functioning tertiary hospitals with similar services varies across Iraq’s governorates and districts. This approach assisted in assessing Iraq’s national preparedness while permitting subnational analysis for differences as needed.

Outcomes to Determine COVID-19 Preparedness

The health facility survey had two sections: a Health Facilities (HF) (hospitals and primary health care centers) section and a Health Care Workers (HCW) section. This paper looks at the outcomes related to the preparation of hospitals only. A designated health facility administrator, as well as representative staff across disciplines, answered questions relevant to the different survey domains of 1) Facility operations and impact of COVID-19, 2) Infection Protection and Control (IPC), and PPE training and inventory, 3) staffing, 4) medication availability and 5) facilities isolation capacity. Health care staff to answer relevant sections of the survey were chosen prior to the site visits by the designated hospital administrators. Each hospital had to provide respondents across departments from physicians, nurses, pharmacy, allied health workers, radiology, laboratory services, facilities, maintenance, cleaning staff and administrative staff. Training in IPC procedures was captured in both the facility and healthcare worker surveys. The primary outcome measures were COVID-19 preparedness defined as staffing and PPE allocation. Additional outcome variables were training and adherence to infection control procedures and surveillance capacities such as laboratory supplies and training for laboratory personnel. Additional variables, such as facility flow (patient movement from screening, check-in, waiting rooms and hospital admission), availability of isolation rooms, and secluded triage areas were also included in the outcomes associated with COVID-19 facility readiness.

Core variables such as staffing per patient were standardized based upon standard units of patient capacity per facility based on total count on hand at time of the survey. Resources per facility were standardized based upon the total patient capacity of the facility for hospitals (general and tertiary/referral) and standardized per 100 patient beds. PPE inventory was standardized based upon the total staff assigned to serve the facility across all shifts and normalized to 10 staff members. We had to standardize our analysis of PPE to account for the fact that all hospital supplies are commissioned via the Department of Health Directorate Store and are usually fulfilled with monthly allocations but with non-standardized time frames. The hospital surveyors took measurements for marked spacing between patients in waiting areas using metric standards. Other facility flow, patient designations and patient visiting procedures were recorded based upon observations of posted procedures in the hospitals. Information on infection control training and procedures were validated by administrative staff as well as
healthcare personnel self-reporting completion of training, if available. Questions regarding availability of PPE were answered based upon health care workers and staff self-reporting.

For the descriptive analysis, we expressed continuous variables as mean (95% confidence interval) or mean (standard deviation) and summary categorical variables as numbers (percentage). We analyzed the difference between the COVID-19 and nonCOVID-19 hospital facilities by calculating 95% confidence intervals around the mean using linear regression. Chi-square analysis was calculated for nominal, binary variables. We considered a difference in mean and 95% confidence interval for facility type as statistically significant. Confidence intervals of staffing and supplies are presented to better represent the variation of preparedness across facilities.