

## Human Progress is Linked to Outreach and Shared Problem-Solving

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Microbes and viruses shape civilizations.<sup>1</sup> Every hour our immune systems fend off microbial attacks both from within and without. Immune system and its programmability are nature's marvelous gift package that has helped us survive and thrive in spectacular way. Performing silently and constantly, these biological defenses are remarkably adaptable in both recognizing and understanding the invader forever besides conferring lifelong immunity against them. Dietary choices and lifestyles keep us all healthy through stronger immunity.<sup>2</sup> Looking back at the history of epidemics/pandemics, investing in improving the individual as well as collective immunity is the core objectives for households, communities, and nations. Modern public health owes its rise to the aftermath of outbreaks and survivors that compelled us to prioritize the delicate equilibrium between humans, the causative agent(s), and the environment.

The current stage of ongoing SARS-CoV-II pandemic has necessitated the interdisciplinary cooperation to ensure continuous struggle for human survival and longevity. Medical researchers, scientists, and administrators have combined re-test ideas that lay in the proverbial waste-bins of history.<sup>3</sup> From off-label drugs to vaccines, a plethora of research activity has been documented on clinical trial registries in last one year. The traditional linear chronology of new drug/biologic product development has run a different course this time with each trial phase running in parallel.<sup>4</sup> Correspondingly, a record number of Emergency Use Authorizations (EUA) have been issued. Like hand washing that dramatically reduced oral-fecal contamination to save millions of children in past century and quarantine that emerged as protecting against medieval bubonic plague, COVID-19 might end up shaping the manner and time it takes to develop new drugs and biologics.

Different and newer stakeholders have also emerged and made themselves counted in these times. Universities and institutions have mobilized those resources, infrastructure, and relevant faculties that traditionally performed academic activities. These include academic research that pre-dominantly results in award of degrees and credentials for the sake of job-seeking and promotions. It took University of Health Sciences (UHS) Lahore few days in March 2020 to re-orient itself to

enormity of threat that Coronavirus posed when announced as a global threat. As the largest public-sector medical university in Pakistan, its leadership directed actions to promote community education on COVID-19, innovated to reach out to both public and professionals, and forged sustainable linkages that not only helped through the immediate response but also trail blazed its course for similar challenges in future.

With active engagement of the Chancellor who is also the Governor of Punjab, the Vice Chancellor Professor Javed Akram led the team from various disciplines that activated the telemedicine center from the scratch. Amid uncertainties and scaremongering in early phase of the pandemic, an "infodemic" had also emerged and continues. To prevent widely circulating misinformation to harm citizens and serve them with a professional and sound medical advisory service, the UHS Telemedicine has to date served tens of thousands nationwide calls through involvement of hundreds volunteering physicians and experts from other fields. Throughout the year 2020, it has brought quality health advice to the doorsteps of citizens not only in wake of COVID but for an array of medical/dental disorders. A comprehensive Master in Health Informatics Program for post-graduate studies has emerged out of this experience. This would sustain this initiative further. In addition, the University has helped procure and distributed tons of personal protective equipment when these were scarce and causing enormous distress among the frontline workers across Pakistan. Several pieces of these equipment such as facemasks and hand-sanitizers were locally designed, developed for quality and appositeness, and then distributed. A host of other activities narrated below were also undertaken as comprehensive pandemic response.

Generation of knowledge is the core objective of an educational institution. The potential of UHS as frontline institution with well-equipped laboratories and highly qualified professionals was fully demonstrated through nearly 30 clinical trials all dedicated to better understand the disease patterns as well as testing COVID treatments as high-quality Phase III clinical trials. Next-generation Sequencing (NGS) of virus has been conducted as the first such local effort. Diagnostic facilities like Real

Time Polymerase Chain Reaction (RT-PCR) were dedicated towards public service to pass on their maximum benefits to public. A drive-through was established that continues to direct suspect cases for sample-collection. Thousands of tests have been conducted to date under certification of Punjab Healthcare Commission (PHC). Multidisciplinary and inter-departmental nature of these initiatives has been replicated to form inter-university consortia and international linkages that drove the quest for treatment and prevention research.

Phase III clinical trials require highly sophisticated human resources and professional competencies for success. Majority of trials undertaken fail to achieve their objectives. The margin of mistakes and errors in situations like pandemic was already thinner. Pakistan Randomized and Observational Trial to Evaluate Coronavirus Treatment (PROTECT) was the landmark research assessing the possible therapeutic benefit of three widely available off-label drugs so that the possibility of a cost-effective treatment could be explored. A total of 12 hospitals in 8 cities have participated in this research whose early findings are already published. This paved the way for multi-country phase III trials of candidate vaccines from leading Chinese laboratories. Led by National Institute of Health, UHS participated in testing CanSino BIO study that led to its now commercial activities for the entire country. It is a groundbreaking research that helped university meet its objectives of commercializing its research. The 2nd Phase III trial of candidate vaccine named ZF 2001 is also in progress. Nearly 12,000/- individuals have enrolled for the three major clinical trials at UHS since March 2020. It reflects the community trust and stake in progress of this institution. It also reflects the trust of international partners as reflected in under-construction Silk Road Clinical Trial Center being executed at UHS City

Campus through the matching grant by Anhui Zhiefie Biopharmaceuticals Company Limited China, the global sponsors of ZF 2001 research.

Institutions like Universities are known to be resistant to change. The re-orientation of UHS mission in wake of pandemic will probably be the silver lining in wake of SARS-CoV-II pandemic that also provided the opportunities for a healthier organizational introspection. One hopes this cultural change will sustain to maximize its dividends to the public.

## References

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