Mortality Surveillance Framework & Implementation Plan, Pakistan

2025-2029

Acknowledgements

The successful development of this comprehensive mortality surveillance framework for Pakistan stands as a testament to the invaluable contributions of numerous esteemed individuals and esteemed organizations. We extend our deepest gratitude to the dedicated participants representing a diverse array of stakeholder groups including representatives from the Ministry of National Health Services, Regulation & Coordination (MoNHSRC), National Institute of Health (NIH), Islamabad, Ministry of Planning, Development & Special Initiatives (MoPDSI), National Database & Registration Authority (NADRA), US Centers for Disease Control & Prevention (USCDC), Maternal & Perinatal Death Surveillance & Response (MPDSR), World Health Organization (WHO), Population Council, UK Health Security Agency (UK-HSA), John Snow Institute Inc. (JSI Inc.) / US Agency for International Development (USAID), Chemonics, International Committee of the Red Cross (ICRC), District Health Offices (DHO), Pakistan Institute of Medical Sciences (PIMS), Federal General Polyclinic, and other organizations. Their profound expertise, insightful discussions, and constructive feedback during the workshop were instrumental in shaping this vital public health tool.

We also acknowledge with deepest appreciation the generous support of Global Health Development | The Eastern Mediterranean Public Health Network (GHD|EMPHNET). Their unwavering financial backing and collaborative spirit have been pivotal in facilitating both the crucial workshop and the ongoing development of this framework. This collective effort stands as a powerful symbol of our shared commitment to strengthening Pakistan's public health system and ensuring data-driven decision-making for improved health outcomes for all citizens.

Message from CEO NIH

Dr. Muhammad Salman
Chief Executive Officer
National Institute of Health
Islamabad

It is my pleasure to introduce the Mortality Surveillance Framework and Implementation Plan, a landmark initiative poised to transform Pakistan's public health landscape. Guided by the principles of the Global Health Security (GHS) Agenda, the International Health Regulations (IHR), and the findings of the 2023 Joint External Evaluation (JEE), this framework is a testament to our commitment to strengthening the nation's health infrastructure.

We recognize that accurate and comprehensive mortality data is essential for understanding the health challenges we face and for making informed, evidence based decisions that can save lives. The Mortality Surveillance Framework has been meticulously crafted through a collaborative and iterative process, engaging a broad spectrum of stakeholders to ensure that it is robust, adaptable, and reflective of Pakistan's unique public health needs.

This initiative is not just a plan on paper; it is a strategic blueprint for action. By improving the quality and completeness of mortality data (capturing both facility based and community-based deaths) we will gain a clearer picture of the health threats facing our population. This, in turn, will enable us to respond more swiftly and effectively to emerging health crises, whether they be outbreaks, epidemics, or other public health emergencies. Moreover, the framework will play a pivotal role in reducing Pakistan's disease burden. By analyzing mortality trends, we can identify and address the root causes of death, leading to targeted interventions that improve health outcomes across the nation. This is a critical step in our mission to enhance the well-being of all Pakistanis.

The successful development of this framework would not have been possible without the unwavering support of our partners. We are deeply grateful to GHD|EMPHNET for their financial backing and to the US Centers for Disease Control and Prevention (US-CDC) for their invaluable technical expertise. Their contributions have been instrumental in shaping this initiative and ensuring its alignment with global best practices.

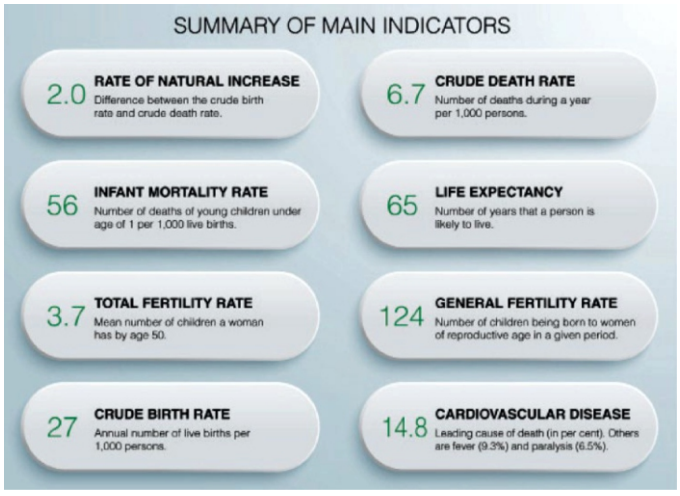
As we move forward with the implementation of this framework, I am filled with optimism and confidence that this framework will empower us to make better decisions, allocate resources more effectively, and ultimately build a healthier, more resilient nation. Together, with the continued collaboration of our partners and the dedication of our public health professionals, we will achieve our shared vision of a healthier nation, where every life is valued, and every death informs our path to a better future.

Preface

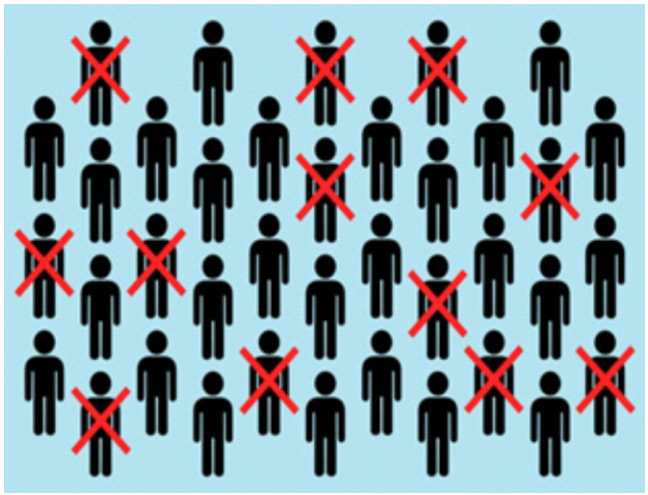
Establishing a Comprehensive Mortality Surveillance System: A Framework for Improved Public Health Outcomes

Pakistan's healthcare system faces constant challenges due to emerging health threats and a changing population. The summary of main demographic indicators as per Pakistan Demographic Survey (2020) is presented in Figure-1. To effectively address the issues linked with diseases and deaths, accurate and up-to-date data on deaths is essential.

This document proposes a plan to establish a comprehensive mortality surveillance system, taking into account the country's specific situation. The plan focuses on four key areas: streamlining data collection across healthcare facilities / death registries / community-based reporting, improving data accuracy, encouraging collaboration between health departments and hospitals, and utilizing technology to integrate data from various sources.



Summary of main demographic indicators as per Pakistan Demographic Survey – 2020 (Ref: https://www.pbs.gov.pk/sites/default/files/population/publications/pds2020/pakistan_demographic_survey_2020.pdf



A timely, comprehensive mortality surveillance program will benefit Pakistan's public health by identifying new disease outbreaks, evaluating the effectiveness of health programs, and informing data-driven policy decisions.

This plan requires collaboration from the government, health institutions, and international organizations. By working together, Pakistan can build a resilient mortality surveillance system that safeguards public health, saves lives, and guides better decision-making based on real data.

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Section-A
Mortality Surveillance Framework

1. Background

Public health surveillance is essential for early detection and monitoring of diseases and health conditions. By collecting data on a wide range of conditions, like infectious diseases, non-communicable diseases (NCDs), chronic illnesses, injuries, and deaths, etc., public health officials can identify the changing patterns and trends of the diseases and health conditions. This information facilitates the understanding of the burden of diseases, their distribution, and risk factors. Equipped with this knowledge, appropriate interventions and preventive measures can be implemented to reduce the impact of these conditions on the population.

Morbidity and mortality rates are two critical indicators used to assess the health status of any community or population. Mortality represents the most severe outcome of a disease and the ultimate fate of human life. Disease surveillance and mortality surveillance systems play an indispensable role in monitoring and controlling the spread of diseases and assessing the overall health status of a population.

The disease and mortality rates within a health system can have significant economic implications, impacting both the macro- and microeconomic levels. At the macro level, the economic burden of diseases and mortalities can be observed in increased healthcare expenditure. When a health system is burdened with a high number of diseases and mortalities, it requires additional resources to provide medical care, including hospitalization, medication, and specialized treatments. This increased demand for healthcare services can strain the healthcare budget, leading to higher healthcare costs for both governments and individuals.

As per Pakistan Economic Survey, 2022-23, the neonatal mortality, infant mortality, and under-5 mortality rates are as follows:

	2020	2021
Maternal Mortality Ratio (Per 100,000 Births)	154	-
Neonatal Mortality Rate (Per 1,000 Live Births)	40.4	39.4
Mortality Rate, Infant (Per 1,000 Live Births)	54.4	52.8
Under-5 Mortality Rate (Per 1,000 Live Births)	65.5	63.3
Incidence of Tuberculosis (Per 100,000 People)	255	264
Life Expectancy at Birth, (Years)	66.3	66.1
Births Attended by Skilled Health Staff (% of Total)	68.0	-

Different health indicators as reported in Pakistan Economic Survey 2022-23For any health system, particularly one struggling with weakness and fragmentation, recording and reporting mortality rates is the single most crucial indicator of a Background community's health status. Acting as a cornerstone of public health systems worldwide, mortality surveillance provides vital data on the causes and patterns of deaths within a population. This information empowers policymakers and public health officials to identify and address health concerns with greater effectiveness.

In Pakistan, the mortality data is collected from various sources, including health facilities, community-based reporting (led by LHWs/CHWs), and Health Management Information Systems (HMIS), these systems often operate independently. This lack of data sharing and central compilation hinders a complete understanding of deaths and their leading causes. Ideally, all these primary sources would be coordinated and aligned with the Civil Registration and Vital Statistics (CRVS) system. However, current systems are not integrated with CRVS, leading to potential inaccuracies and missed information. Moreover, additional efforts like demographic health surveys, notifiable disease reporting, and maternal and perinatal death surveillance programs provide valuable supplementary information. Despite this multi-pronged approach, the lack of data sharing and integration remains a significant barrier to a truly comprehensive national mortality picture.

Pakistan, with its population exceeding 240 million and ranking as the world's fifth most populous nation, underscores the critical need for a robust mortality surveillance program. Monitoring and understanding mortality patterns are essential for identifying health trends and implementing targeted interventions within such a large population.

However, the existing system in Pakistan faces significant challenges that hamper its effectiveness, requiring immediate attention and improvement.

1.1: Challenges For Mortality Surveillance in Pakistan

Pakistan's underestimation of deaths stems primarily from a lack of standardized reporting, with voluntary (or passive) death registration leading to incomplete data. Additionally, limited healthcare capacity and insufficient training for personnel hinder accurate cause-of-death determination, particularly for deaths outside medical settings. The fragmented nature of data collection and the lack of coordination between different levels further exacerbate the problem.

To address these challenges and ensure accurate and timely data available for mortality surveillance purposes, Pakistan urgently needs to develop a framework and operational plan for a comprehensive mortality surveillance program. Such a program will help compile and harmonize the requisite mortality data for effective public health decision-making, improve the understanding of disease burden and risk factors, and strengthen the healthcare system’s response to emerging health threats. It will also reinforce concurrent efforts to strengthen official CRVS processes in Pakistan. We urge all stakeholders to actively advocate for these improvements and support initiatives aimed at strengthening Pakistan’s mortality surveillance capacity.

2. Situational Analysis

2.1: Health Sector of Pakistan

Pakistan boasts a 2023 census-recorded population of 241.5 million with a 2.55% annual growth rate. Approximately 35% of the population resides in urban areas, resulting in an overall population density of 312 persons per square kilometer. Following the 18th Amendment to the Constitution implemented in 2011, healthcare administration has become a provincial responsibility.

Pakistan's healthcare infrastructure encompasses both governmental and private sectors, with the non-health sector also contributing significantly, albeit indirectly, to health outcomes. Each provincial government operates a dedicated Ministry of Health responsible for the planning, development, implementation, management, and expansion of health-related processes, activities, and systems. Additionally, these ministries regulate the private healthcare sector within their respective jurisdictions.

At the federal level, the MoNHSRC oversees policy formulation, facilitates interprovincial coordination for policy enforcement, maintains active liaisons with international non-governmental organizations (INGOs) involved in healthcare, and directly provides medical services at the federal level. MoNHSRC's vision emphasizes delivering efficient, equitable, accessible, and affordable healthcare systems aimed at supporting individuals and communities in improving their health status.

The Federal and Provincial Secretaries of Health, alongside the Director General Health Services (DGHS), manage the entire spectrum of health ministry functions. The Secretary of Health primarily handles administrative, financial, and technical matters, while the DGHS focuses on technical aspects. Healthcare facilities within the government sector include primary healthcare centers (dispensaries and Basic Health Units), rural health centers, tehsil headquarters hospitals, district headquarters hospitals, tertiary care hospitals, and medical teaching hospitals.

District Health Officers (DHOs) oversee dispensaries, Basic Health Units, rural health centers, tehsil headquarters hospitals, and, in some districts, district headquarters hospitals. Tertiary care hospitals and medical teaching hospitals remain under the Situational Analysis direct purview of the Secretary of Health. Vertically structured programs, such as TB control, HIV/AIDS control, malaria control, and the Expanded Program on Immunization, operate at both federal and provincial levels. Federal program offices report to the federal Secretary of Health, while provincial ministries manage their respective program offices. Similarly, DHOs manage district chapters of these programs, including the Lady Health Workers program.

The private health sector in Pakistan encompasses a diverse range of healthcare providers, including clinics, dispensaries, diagnostic laboratories, secondary healthcare facilities, and tertiary healthcare hospitals. These entities play a crucial role in complementing and enhancing the public health system. Notably, the government of Punjab and Sindh has established a dedicated healthcare commission specifically tasked with regulating and ensuring the quality of care within the private sector. This demonstrates a commitment to fostering a robust and well-managed private healthcare landscape.

Beyond the healthcare sector itself, various non-health sector contributors play vital roles in shaping and supporting the overall health system. These entities may not directly fall under the purview of the Ministry of Health, but their contributions are nonetheless invaluable. Examples include the National Disaster Management Authority (NDMA), National Database and Registration Authority (NADRA), Public Works Department (PWD), Water and Sanitation Agencies (WASA), and Environmental Protection Agencies (EPA). Their work in areas like disaster response, citizen identification, infrastructure development, water sanitation, and environmental protection directly and indirectly impacts the health and well-being of the population.

Recognizing and leveraging the contributions of these non-health sector actors is crucial for achieving comprehensive and sustainable health outcomes. The conceptual diagram of health delivery system in Pakistan is as follows :

The Pakistan Economic Survey, 2022-23, reported the health workforce is as follows

Registered Medical and Paramedical Personnel (in Nos.)

Health Manpower	2016	2017	2018	2019	2020	2021	2022
Doctors	195,896	208,007	220,829	233,261	245,987	266,430	282,383
Dentists	18,333	20,463	22,595	24,930	27,360	30,501	33,156
Nurses	99,228	103,777	108,474	112,123	116,659	121,245	127,855
Midwives	36,326	38,060	40,272	41,810	43,129	44,693	46,110
Lady Health workers	17,384	18,400	19,910	20,565	21,361	22,408	24,022

Note: Data is reported on Calendar Year Basis

Source: Pakistan Bureau of Statistics (PBS)

Health workforce as per Pakistan Economic Survey Report 2022-23

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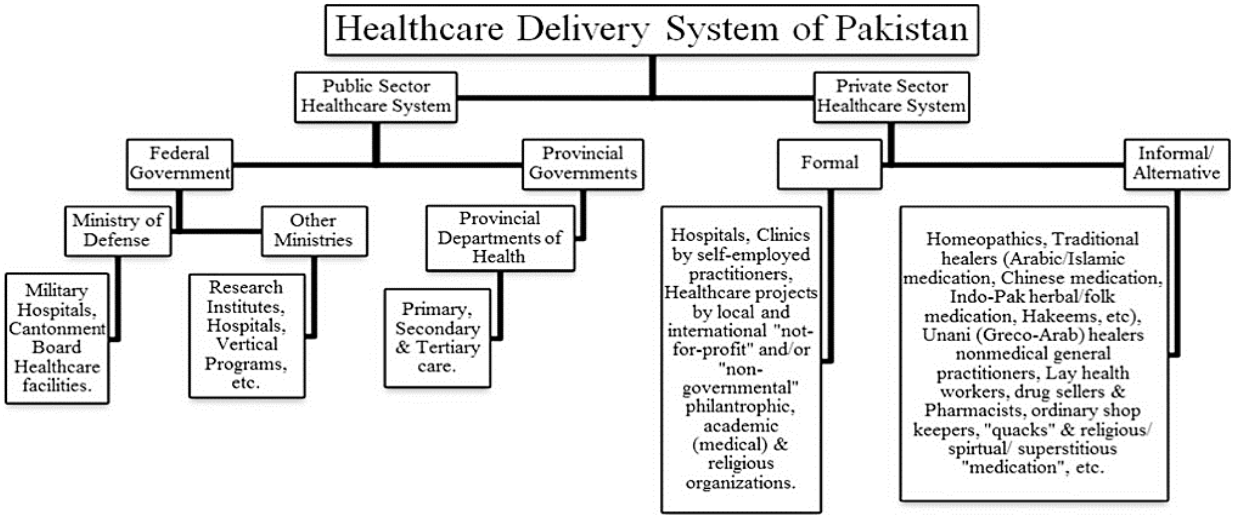
Conceptual diagram of health care delivery system of Pakistan



citizen identification, infrastructure development, water sanitation, and environmental protection directly and indirectly impacts the health and well-being of the population. Recognizing and leveraging the contributions of these non-health sector actors is crucial for achieving comprehensive and sustainable health outcomes.

2.2: Civil Registration and Vital Statistics in Pakistan

Pakistan's Civil Registration and Vital Statistics (CRVS) system is governed by the Registration of Births and Deaths Act, 1961. This act mandates the registration of both births and deaths by designated officials. While the specific date of the latest update is not readily available, efforts are ongoing to modernize the system.

The National Database and Registration Authority (NADRA) is the primary agency responsible for overseeing CRVS operations under National Registration Act (NADRA Act) of 1997, with the latest amendments passed in 2017. Currently, death notification primarily relies on family members or designated individuals. There is no mandated requirement for a medically certified cause of death (MCCD) for all deaths. However, efforts are underway to improve this. For instance, community-based reporting systems led by Lady Health Workers (LHWs) collect cause-of-death information, but this data may not be fully integrated with the CRVS system yet.

Initiatives like the National Institute of Population Studies (NIPS) and the World Health Organization (WHO) collaborate with local health departments to collect cause-ofdeath information for community deaths through verbal autopsies or community death investigation tools. The responsibility for publishing official vital statistics falls under NADRA. While consistency in data collection and reporting across different sources remains a challenge. Despite challenges, Pakistan's statistics agency, the Federal Bureau of Statistics (FBS), strives to publish official vital statistics reports, though the regularity of these publications can vary. Improvement efforts are ongoing, with a focus on strengthening coordination between data collection sources, integrating CRVS with health information systems, and implementing standardized death notification and MCCD reporting procedures.

Pakistan, as a signatory to the International Health Regulations (IHR 2005), has a commitment to strengthening its core capacities for disease prevention, detection, and response. The recent Joint External Evaluation (JEE-2023) emphasized the need to strengthen and enhance disease surveillance and response capabilities, including the establishment of mortality surveillance. All aforementioned entities - facilities, programs, and departments - constitute key stakeholders within the health system. While the primary responsibility for disease surveillance data collection, analysis, interpretation, and dissemination rests with federal and provincial ministries of health, other departments and agencies play a crucial supporting role in facilitating this vital function. At the federal level, the MoNHSRC has delegated this responsibility to the National Institute of Health (NIH) in Islamabad.

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NIH is the ideal organization for establishing a mortality surveillance system due to its extensive expertise in disease surveillance and public health research. NIH's existing Integrated Disease Surveillance

and Response (IDSR) system provides a robust framework for incorporating mortality data. With its advanced technical capacity, established collaborative networks with local and international health organizations, and a proven track record in managing public health initiatives, NIH is uniquely positioned to enhance Pakistan's capacity to monitor and respond to emerging and reemerging diseases, outbreaks and epidemics. By leveraging NIH's strengths in these areas, the mortality surveillance system can be effectively integrated into the existing surveillance infrastructure, enhancing Pakistan's ability to respond to the public health threats.

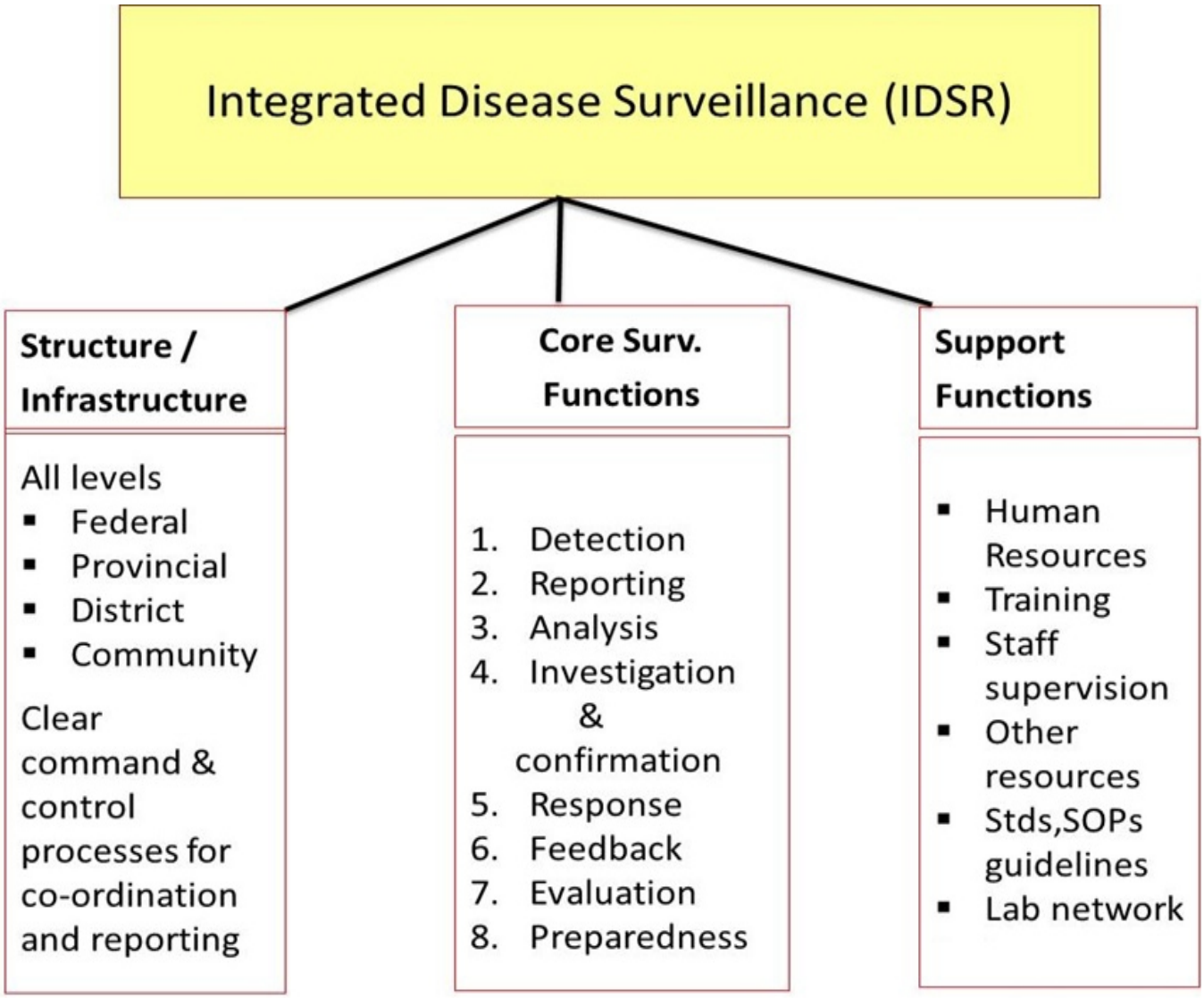
2.3: Integrated Disease Surveillance and Response in Pakistan

Public health surveillance in Pakistan is essential for protecting the population from infectious diseases. Various programs aim to track and control communicable diseases, including vaccine-preventable illnesses like measles and polio, as well as vector-borne diseases like dengue and malaria. Additional efforts focus on sexually transmitted infections, tuberculosis, and other communicable illnesses. One key initiative is the Integrated Disease Surveillance and Response (IDSR) system, launched by the Ministry of National Health Services Regulations & Coordination (MoNHSR&C) in 2016, and Pakistan's National Institute of Health (NIH) was mandated to establish and manage this program. Working hand-in-hand with provincial health departments and international partners like US-CDC and WHO, IDSR has become the backbone of disease surveillance across the country. IDSR serves as the foundation for detecting disease outbreaks, collecting real-time data, and enabling a rapid, coordinated response to public health threats. By integrating data from primary, secondary and tertiary health facilities, IDSR allows health officials to monitor trends, identify potential outbreaks early, and implement effective control measures. The strengths of the IDSR program make it particularly suitable for incorporating a mortality surveillance component, enhancing its capacity to track and respond to public health threats comprehensively.

While IDSR excels at gathering weekly data on various illnesses, offering invaluable insights into disease trends, a critical gap remains, mortality data, a cornerstone of public health decision-making, currently exists in a fragmented state, scattered across various departments and programs at both federal and provincial levels. The current patchwork approach breeds inconsistencies, duplication of effort, and ultimately, hinders the ability to effectively combat diseases and save lives. For instance, during the COVID-19 pandemic debates arose about the true extent of excess mortality (deaths exceeding historical averages). Without robust mortality surveillance, it was difficult to distinguish whether increased deaths were directly caused by COVID-19, resulted from a lack of access to healthcare for other illnesses, or stemmed from other factors. A comprehensive mortality surveillance system, ideally integrated with existing programs like the Integrated Disease Surveillance and Response (IDSR) system, would have provided crucial data for a clearer understanding of the pandemic's true impact.

Recognizing this limitation, the NIH has embarked on an ambitious five-year roadmap. This roadmap envisions a future where IDSR transcends its current function, evolving into a unified platform that incorporates data from diverse sources. Envisioned is a system that seamlessly integrates information from vertical programs tackling specific diseases like tuberculosis, tertiary care hospitals treating the most complex cases, and even the private sector, which plays a significant role in Pakistan's healthcare landscape. Medical colleges, brimming with future healthcare professionals, could also contribute valuable data to this comprehensive platform.

The IDSR program is based on three pillars which are as follows :



This paradigm shift has the potential to revolutionize health data collection and management in Pakistan. By stitching together this fragmented landscape, the NIH's roadmap paves the way for a more holistic understanding of mortality trends. Imagine being able to identify not just outbreaks of infectious diseases, but also spikes in mortality rates that could signal a previously unknown public health threat.

This journey won't be without its challenges. Data standardization and ensuring quality across these diverse sources will be crucial. However, the potential benefits are undeniable, a unified mortality surveillance system, fueled by IDSR's reach and complemented by a robust data management platform, will empower Pakistan to:

Sharpen disease outbreak detection: Mortality data trends can serve as early warning signals for emerging health threats.

Fine-tune health interventions: By tracking changes in mortality rates associated with specific diseases, policymakers can assess the effectiveness of public health programs and make data-driven adjustments.

Save lives through informed decisions: Timely and accurate mortality data empowers policymakers to formulate evidence-based policies that can improve public health outcomes and ensure a healthier

future for all Pakistanis.

The unification of mortality data under the IDSR umbrella holds immense promise for Pakistan's public health future. By overcoming the current data fragmentation and leveraging the strengths of this ambitious roadmap, Pakistan can move from a patchwork system to a unified platform, empowering a more informed and effective response to the nation's health challenges.

2.4: Bridging the Data Divide: The Role of DHIS-2 in Strengthening Pakistan's Mortality Surveillance

While the potential of the NIH's IDSR roadmap for consolidating mortality data is undeniable, the successful implementation hinges on addressing the challenge of data integration. This is where the District Health Information System 2 (DHIS-2) emerges as a critical complementary tool.

DHIS-2 is a web-based platform specifically designed for robust health information management. Its core strength lies in its ability to serve as a centralized repository, seamlessly integrating data from diverse sources. By strategically integrating data collected through the IDSR program with information from various healthcare facilities, including vertical programs, tertiary care hospitals, and even the private sector, DHIS2 can establish a comprehensive mortality surveillance system for Pakistan.

This strategic integration would leverage the strengths of both platforms. IDSR's established data collection network can serve as the feeder system, supplying DHIS2 with a continuous stream of up-to-date mortality data. In turn, DHIS-2's data management expertise ensures data quality, consistency, and accessibility for analysis. This powerful synergy has the potential to bridge the current data gap in Pakistan's mortality surveillance landscape. The establishment of a more robust mortality surveillance system, facilitated by the combined efforts of IDSR and DHIS-2, will yield significant benefits.

2.5. National SWOT Analysis

The following SWOT analysis examines the strengths, weaknesses, opportunities, and threats (SWOT) across the three pillars of the national IDSR surveillance system for consideration in establishing nationally-coordinated mortality surveillance in Pakistan.

2.5.1: Strengths:

- **Strong government ownership and commitment:** The government's ownership of the IDSR system ensures its sustainability and provides a strong foundation for future development.
- **Well-established infrastructure:** The system leverages existing infrastructure, including the Federal Disease Surveillance & Response Unit (FDSRU), Provincial Disease Surveillance & Response Unit (PDSRUs), and District Disease Surveillance & Response Units (DDSRUs), facilitating efficient data collection and analysis. Public Health Bulletin-Pakistan plays a crucial role in dissemination of data and information to relevant stakeholders.
- **Adaptability and scalability:** The IDSR system is designed to be adaptable and can be scaled up or down depending on specific needs and resource availability.
- **Clear governance structure:** Defined roles and responsibilities ensure smooth operation and facilitate effective decision-making.
- **Trained workforce:** Government-trained personnel possess the necessary skills and expertise to operate and maintain the system.
- **Consistent 3-pillar strategy:** The IDSR system emphasizes data collection, analysis, and response, providing a comprehensive approach to disease surveillance.
- **Financial and technical support:** The system benefits from ongoing financial and technical support, contributing to its continued improvement and development.
- **Field Epidemiology Training Program (FETP):** The FETP plays a crucial role in strengthening laboratory capacity and data integration.
- **Data integration with DHIS-2:** Utilizing the DHIS-2 platform enhances data accessibility and facilitates interoperability with other health information systems.
- **Collaborations with national and international agencies:** The system can take benefit from existing collaboration with national and international stakeholders like WHO, UKHSA, US-CDC, GHD|EMPHNET, USAID, JSI Inc., and Jhpiego to enhance its effectiveness.

2.5.2: Weaknesses:

- **Limited coordination:** Insufficient coordination between stakeholders at different levels can lead to inefficiencies and hinder overall effectiveness.
- **Sustainability concerns:** Overdependence on external support raises concerns about long-term sustainability once donor funding ceases.
- **Human resource management challenges:** Issues such as staff shortages, inadequate training, and unclear career paths can negatively impact performance.
- **Vertical programs:** Data silos within vertical programs impede comprehensive disease surveillance and limit data availability.
- **Incomplete laboratory data integration:** Lack of integration hinders the analysis of laboratory data,

leading to potential gaps in disease detection and response.

- **Data reporting discrepancies:** Inconsistencies in data reporting practices across different levels can compromise data quality and reliability.
- **Multiple data reporting systems:** The existence of multiple reporting systems increases administrative burden and poses challenges for data consolidation and analysis.
- **Incomplete IDSR coverage and reporting compliance:** Gaps in coverage and compliance limit the system's effectiveness and represent areas for improvement.
- **Data quality and M&E system limitations:** Insufficient data quality and inadequate monitoring and evaluation mechanisms hinder the system's ability to identify and address weaknesses.
- **Limited response capacity:** Weaknesses in the response component can impede timely and effective interventions in case of outbreaks.
- **Exclusion of the private sector:** The current system primarily focuses on the public sector, neglecting the potential contribution of the private sector to data collection and reporting.

2.5.3: Opportunities:

- **Enhanced stakeholder coordination:** Strengthening coordination mechanisms among stakeholders can improve efficiency, effectiveness, and collaboration.
- **Leveraging IDSR progress for sustainability:** Demonstrating the system's value and achievements can be used to advocate for continued support and sustainable funding.
- **Review of trained staff responsibilities:** Optimizing the roles and responsibilities of trained staff can maximize their effectiveness and address existing skill gaps.
- **DHIS-2 platform utilization:** Fully utilizing the capabilities of the DHIS-2 platform can improve data management, analysis, and dissemination.
- **Integrated data for informed decision-making:** Timely access to reliable, integrated data can empower policymakers to make informed decisions and implement effective public health interventions.
- **Strengthening EBS:** Enhancing the Early Warning and Response System can improve outbreak detection and response capabilities.
- **Expansion to the private sector:** Integrating the private sector into the IDSR system can expand data coverage and improve data quality.
- **Multi-sector and multi-discipline collaboration:** Fostering collaboration across sectors and disciplines can enhance the system's comprehensiveness and effectiveness.
- **Potential to support emergency response:** Strengthening the IDSR system can significantly support emergency response efforts in case of pandemics or other public health emergencies.

2.5.4: Threats:

- **Limited understanding of surveillance:** Lack of understanding of the importance and value of surveillance among stakeholders can hinder system adoption and implementation.
- **Potential withdrawal of technical support:** Dependence on external technical support poses a risk if such support is withdrawn.
- **Transition challenges for human resources:** Managing transitions for human resources, including staff turnover and retirement, can be challenging and require effective planning and support mechanisms.
- **Data security vulnerabilities:** Ensuring data security and confidentiality is crucial, and any vulnerabilities can pose significant risks to the system.
- **Knowledge and practice gaps:** Gaps in knowledge and practice of surveillance methodologies and best practices can limit the system's effectiveness.

With these in mind, the following strategic insights and recommendations can fortify the IDSR system's efficacy and sustainability:

Strengths and Opportunities Synergy:

The IDSR system's clear governance structure forms a solid foundation for sustainable disease surveillance and response. Leveraging these strengths through enhanced stakeholder coordination and fully utilizing DHIS-2 platform can significantly improve the efficiency and data management. Additionally, the system's adaptability and trained workforce are pivotal for embracing opportunities such as integrating the private sector and expanding the use of digital tools.

Addressing Weaknesses through Opportunities:

The IDSR system's weaknesses, notably in coordination, sustainability, and human resource management, present considerable challenges. However, these can be mitigated by harnessing opportunities like enhancing stakeholder coordination, leveraging progress to advocate for sustainable funding, and optimizing trained staff roles etc. By reviewing and modifying the roles and responsibilities of trained personnel, the system can address skill gaps and improve performance. Furthermore, expanding collaboration to the private sector can alleviate some of the data coverage and quality issues, making the system more robust and inclusive.

Threats Mitigation:

The threats being faced by the IDSR system, including limited understanding of disease surveillance at higher level, potential withdrawal of technical support, and data security challenges, require proactive strategies. Awareness and advocacy can increase the understanding and perceived value of disease surveillance among stakeholders, thereby reducing the risk of underutilization. Establishing the technical support mechanisms can minimize the impact of external support withdrawal. Addressing data security and confidentiality through strengthened protocols and technology will safeguard the system against vulnerabilities.

2.6. Health & Disease Surveillance Landscape At Provinical Level

2.6.1: Punjab:

Punjab, Pakistan's largest province, boasts a population of 127.69 million (2023 census). Of this, 75.72 million reside in rural areas and 51.97 million in urban areas, with a population growth rate of 2.53% (Source: Census 2023).

To understand the mechanisms and arrangements in place for disease and mortality surveillance in Punjab, a series of meetings were conducted with provincial health authorities. These included the Director of Communicable Disease & Epidemic Prevention Control (CD&EPC), the Additional Director of the Management Information System (MIS), the Manager of Operations, the Manager of Trainings, DHOs, District Disease Surveillance Coordinators (DSCs), and FETP fellows. The meetings revealed that Punjab utilizes several dashboards for disease surveillance, encompassing:
Disease-specific dashboards: Disease Surveillance System (DSS) dashboard, Dengue fever surveillance dashboard, etc.
Program-specific dashboards: Vaccine-preventable diseases (VPDs) dashboard for the Expanded Program on Immunization (EPI).
General dashboards: Hospital Management Information System (HMIS) etc.
DHIS2 routine health information system has been implemented in all over the Punjab, all 34 communicable diseases reported through DHIS2 with mortality.
Verbal Autopsy on maternal mortality system implemented by IRMNCH&N Program CRVS System implemented by P&SHD and SHC&ME

Death slips issued by Secondary level hospitals through Implementation and training of all Service Providers on of ICD-11 However, these dashboards operate independently and lack interconnectivity. This raises concerns about data duplication and hinders the presentation of a comprehensive picture of provincial surveillance data.

Similarly, the mortality data component remains weak. Data collection, when conducted, is often program-specific and lacks in-depth analysis to reveal comprehensive insights into mortality causes. Consequently, this data is not utilized for decision-making or policy formulation.

All health authorities emphasized the need for a robust mortality surveillance mechanism capable of providing a comprehensive understanding of mortality causes and supporting the decision-making and policy-making process.

In collaboration with the provincial health authorities, a detailed SWOT analysis was conducted, attached as Annexure-I.

2.6.2: Sindh:

Sindh, the second-largest province in Pakistan based on population, has a population of 55.70 million as per the 2023 census. Of this, 23.32 million reside in rural areas and 15.02 million in urban areas, with a population growth rate of 2.57% (Source: Census 2023).

In October 2023, a comprehensive assessment was conducted to evaluate the strengths, weaknesses, and gaps in disease and mortality surveillance data reporting across Sindh. The assessment involved scoping and mapping visits to district health offices and primary healthcare facilities in diverse

districts, including both rural and urban settings. The districts covered were:
Karachi Malir
Karachi Korangi
Jamshoro

The assessment revealed that DHOs bear significant responsibility for overseeing primary and secondary care health facilities, district chapters of vertical programs, and lady health workers. Their duties encompass managing disease outbreaks, health emergencies, immunization campaigns, and special health initiatives as directed by the provincial health ministry. The IDSR facilitates disease data collection from all primary and secondary healthcare facilities. DHOs are accountable for ensuring the timeliness, completeness, and district-level analysis of this data.

However, a significant gap exists in the collection and reporting of mortality data. While some health facilities or vertical programs may possess this data, it is not routinely reported to DHOs, creating a fragmented and incomplete picture. Similarly, lady health workers, responsible for visiting communities to provide ante-natal, post-natal, and immunization services, do not report data on maternal, infant, or neonatal mortality. This lack of consolidated data prevents DHOs from understanding the total mortality numbers and rates within their districts, hindering their ability to identify major determinants and risk factors for mortality. These factors are crucial for formulating effective policies and recommendations to improve the community's health status. DHOs acknowledged this gap and expressed their willingness to implement a standardized system across the province or the country.

Furthermore, in 2023, the NIH conducted a baseline survey of all Sindh districts. The survey, which included 30 randomly selected primary healthcare facilities across the province, revealed that while data is generally reported regularly on a weekly basis (with daily reporting in some districts using a mobile application), gaps still exist in data quality, timeliness, and staff training. Additionally, the survey confirmed the lack of a systematic and consolidated approach to mortality data collection.

In collaboration with the provincial health authorities, a detailed SWOT analysis was conducted, attached as Annexure-II.

2.6.3: Khyber Pakhtunkhwa:

Khyber Pakhtunkhwa (KP), with a population of 40.856 million as per the 2023 census, represents the third largest province in Pakistan. The predominantly rural population (34.724 million) contrasts with a smaller urban population of 6.131 million, with an overall population growth rate of 2.38%.

Mirroring the structure of other provinces, the public health sector in KP comprises a tiered system of facilities. This includes Basic Health Units (BHUs) providing primary healthcare services in rural communities, followed by Rural Health Centers (RHCs) offering expanded services. At the next level, Tehsil Headquarter Hospitals (THQs) serve as secondary care facilities, while District Headquarter Hospitals (DHQs) and Medical Teaching Institutions (MTIs) provide tertiary care services. While MTIs and some DHQs contribute to the tertiary care landscape, the majority of facilities focus on primary and secondary healthcare.

In addition to the public sector, KP also boasts a vibrant private health sector encompassing General Practice (GP) clinics, small hospitals, and large tertiary care facilities.

KP has implemented the IDSR for collecting, analyzing, and reporting disease data. This system effectively monitors and responds to outbreaks and emerging public health threats. However, a comprehensive system for collecting and reporting mortality data remains absent. While government

health facilities utilize the IDSR mechanism for mortality data collection when required, no established process exists for gathering data from the private sector.

This lack of a comprehensive mortality data collection system represents a significant limitation, hindering the ability to fully understand mortality trends and develop effective interventions. Implementing a robust system for capturing data from both public and private health facilities is crucial for strengthening public health surveillance and improving health outcomes in KP. In collaboration with the provincial health authorities, a detailed SWOT analysis was conducted, attached as Annexure-III.

2.6.4: Balochistan:

Despite being the largest province in terms of area, Balochistan is the smallest in terms of population, with 14.894 million inhabitants as per the 2023 census. The rural population accounts for 10.282 million, while the urban population stands at 4.612 million, with a population growth rate of 3.20%. However, this population remains dispersed across the vast landscape, facing significant challenges in accessing clean water, food, and adequate healthcare facilities.

Both public and private healthcare sectors in Balochistan are underdeveloped compared to other provinces. The public sector follows the standard structure of BHUs, RHCs, THQs, DHQs, and tertiary care hospitals. However, most primary and secondary facilities suffer from resource scarcity in terms of finances, logistics, and staffing. This leads to understaffing and even non-operation of some facilities, hindering access to essential healthcare services, particularly for the rural population residing in remote areas. While tertiary care hospitals exist in cities, their distance further restricts access for the rural population.

The private sector primarily comprises informal practitioners, GP clinics, and small hospitals. This fragmented landscape contributes to the lack of a well-established disease surveillance system in the province. Although the provincial authorities recently implemented the IDSR in all districts, reporting remains weak. Disease clusters and outbreaks often first come to light through media reports, prompting reactive data collection by health authorities.

Furthermore, disease-specific programs like Tuberculosis Control, HIV/AIDS Control, Malaria Control, and Vaccine Preventable Disease programs collect independent data. This lack of integration hinders the generation of a comprehensive picture of the disease and mortality burden, making informed policy and decision-making difficult. In the absence of a robust surveillance system, the presence of mortality surveillance and reliable mortality data remains a distant aspiration. In collaboration with the provincial health authorities, a detailed SWOT analysis was conducted, attached as Annexure-IV.

2.6.5: Azad Jammu & Kashmir:

Azad Jammu and Kashmir (AJ&K), a self-governing region administered by the Government of Pakistan, boasts a projected population of 4.45 million as per the 2017 census. Its population growth rate stands at 1.61%. Despite a 2019 report indicating a total number of 2950 of hospital beds (an average of one bed per 1,525 people) and one doctor per 4,113 people, concerns remain regarding AJ&K's healthcare coverage (Source: Statistical Yearbook – 2022).

Similar to other Pakistani provinces, AJ&K's public health sector comprises primary, secondary, and tertiary healthcare facilities. The private sector features GP clinics, few-bed hospitals, and private laboratories. Recognizing the lack of a comprehensive disease surveillance system, AJ&K collaborated with the NIH to implement the IDSR system in all its districts. This initiative signifies a positive step towards strengthening data collection, reporting, and analysis. Furthermore, AJ&K is actively working towards

expanding the system to include additional data streams like laboratory results, vertical program data, and disability data.

Currently, AJ&K is having mortality data in numbers only through DHIS report from public sector hospitals only, lacking an informed policy and decision-making. While the International Committee of the Red Cross (ICRC) partnered with the Department of Health, AJ&K to develop a plan and guidelines for managing mass casualty incidents, this initiative remains in its initial phase and focuses solely on disaster-related events like earthquakes, floods, and major road accidents. Consequently, the comprehensive picture of mortality data encompassing all causes remains absent. In collaboration with the provincial health authorities, a detailed SWOT analysis was conducted, attached as Annexure-V.

2.6.6: Gilgit Baltistan:

Gilgit-Baltistan (GB), an administrative territory governed by the Government of Pakistan, has a population of 1.49 million with a growth rate of 2.56% (2017 census). Compared to other Pakistani provinces, GB's health system and infrastructure remains significantly underdeveloped. Like other provinces, its public health sector comprises primary, secondary, and tertiary healthcare facilities. The private sector includes GP clinics, a limited number of small hospitals, and private laboratories.

According to the "Gilgit-Baltistan at a Glance - 2020" report, the region possessed only 557 healthcare facilities in 2020, including 3 district headquarter hospitals (DHQs), 3 regional headquarter hospitals, and 1 provincial health quarter hospital. This translates to a population-to-bed ratio of 1:1043 and a doctor-to-population ratio of 1:2898, highlighting critical gaps in healthcare access.

Historically, GB lacked a comprehensive disease surveillance system. However, the Department of Health, GB, collaborated with the National Institutes of Health (NIH) to implement the IDSR system in all districts. This initiative marked a crucial step towards strengthening data collection, reporting, and analysis. Currently, efforts are underway to expand the IDSR system to include additional data sources such as laboratory results, vertical program data, and disability data.

Despite these advancements, GB currently lacks readily available mortality data at any level, hindering informed policy and decision-making related to public health interventions and resource allocation. Addressing this data gap remains a critical challenge for the region's health authorities. In collaboration with the aforementioned provincial health authorities, a detailed SWOT analysis was conducted, attached as Annexure-VI.

3. Stakeholder Mapping

The success of a comprehensive mortality surveillance system hinges upon the collaboration and support of various stakeholders beyond the Ministry of Health. These stakeholders play crucial roles in data collection, analysis, and utilization. A diverse range of stakeholders play a crucial role in mortality surveillance within Pakistan.
These include:

3.1: Civil Registration and Vital Statistics (CRVS) Project, MoPDSI

Operating under the Ministry of Planning, Development & Reforms, this project aims to collect data on births, deaths, marriages, divorces, and migrations. Collaborating with various governmental and non-governmental stakeholders, it is actively establishing a functional system for data collection. However, a lack of a fully operational mortality reporting processes currently restricts the availability of comprehensive mortality and cause-of-death data. This limits the ability to monitor trends and make informed decisions related to mortality.

3.2: National Database & Registration Authority (nadra)

National Database and Registration Authority (NADRA) plays a significant role in Pakistan's Civil Registration and Vital Statistics (CRVS) system, mandated by the National Registration Act (1997). As the guardian of birth and death registrations, NADRA holds great potential for strengthening mortality surveillance. However, its current weakness lies in the lack of a unified, standardized death notification form, particularly for community deaths, which often lack proper cause-of-death documentation.

Despite this limitation, NADRA possesses strengths that can be utilized for mortality surveillance. Its extensive digital infrastructure and established network of registration Stakeholder Mapping centres across Pakistan position it well to facilitate efficient death registration and data collection. By collaborating with health agencies and implementing standardized death notification procedures, NADRA can play a crucial role for a robust national mortality surveillance system in Pakistan.

3.3: World Health Organization (WHO)

The WHO has actively supported the Ministry of National Health Services, Regulation & Coordination in developing national guidelines for Maternal and Perinatal Death Surveillance and Response (MPDSR) in Pakistan. They continue to collaborate with government stakeholders to strengthen MPDSR implementation nationwide.

3.4: US Center for Disease Prevention and Control (US-CDC)

The U.S. Centers for Disease Control and Prevention (US-CDC) has been a cornerstone in strengthening Pakistan's mortality surveillance capabilities. Beyond its global leadership role, the US-CDC has actively supported Pakistan through on-theground initiatives. They conducted a workshop in Islamabad in 2022 focused on enhancing mortality data collection capacity. Additionally, the US-CDC has advocated tirelessly with national health authorities, elevating mortality surveillance as a public health priority. Furthermore, the US-CDC's technical and financial support to the Maternal and Perinatal Disease Surveillance and Response (MPDSR) program has been instrumental in enhancing data collection on maternal and perinatal deaths. By sharing global best practices and providing tailored assistance, the US-

CDC has significantly strengthened Pakistan's ability to make informed public health decisions, and improved the country's readiness to respond to emerging health threats effectively.

3.5: UK Health Security Agency

As key stakeholders of the IDSR System in Pakistan, the UK-HEALTH Security Agency provides critical financial and technical support for establishing and strengthening disease surveillance. Apart from capturing disease data in IDSR, they also intend to capture mortality data through the IDSR system, and integrate it with disease data during the IDSR expansion phase.

3.6: Agha Khan University Hospital

While actively engaged in various projects related to diseases and mortalities, the Agha Khan University Hospital (AKUH) lacks a system capturing data beyond its network. This limits the scope of their surveillance efforts. Their expertise like conducting verbal autopsies for understanding cause of death in community settings contribute valuable data. Additionally, AKUH's expertise in data analysis can play a valuable role for interpretation of mortality data, allowing for more informed decisionmaking. However, a potential weakness lies in the reach of their programs. AKUH can provide a platform for training of healthcare workers, and expanding these programs to lady health workers and community health workers, could significantly improve the comprehensiveness of national mortality data.

3.7: International Committee of The Red Crescent:

In collaboration with the Department of Health in Azad Jammu & Kashmir (AJ&K), they are developing guidelines for Mass Casualty Incident Management (MCIM). This initiative focuses on effectively managing mass casualty incidents arising from natural events like earthquakes, floods, or heat waves, or from man-made events like accidents.

3.8: JSI INC. / USAID:

John Snow, Inc. (JSI) is actively collaborating with the National Institute of Health (NIH) in Islamabad to significantly enhance Pakistan's public health preparedness and response capabilities through the implementation and strengthening of the Integrated Disease Surveillance and Response (IDSR) system. This collaborative effort aims to strengthen the country's capacity for early detection, rapid response, and effective management of disease outbreaks.

3.9: Donor Agencies Supporting Vertical Programs:

Donor agencies like the Global Fund has played a pivotal role in combating the deadly disease like HIV/AIDS, tuberculosis (TB), and malaria, significantly impacting mortality rates. Their substantial financial contributions have enabled Pakistan to scale up prevention and treatment programs and activities, leading to remarkable reductions in deaths and infections. For instance, the Global Fund's investment in antiretroviral therapy (ART) has saved millions of lives living with HIV/AIDS. Additionally, their support for tuberculosis (TB) control programs has led to increased access to diagnostics and treatment, reducing mortality rates from this devastating disease. Similarly, the Global Fund's efforts to combat malaria, such as providing insecticidetreated nets and antimalarial drugs, have significantly reduced the disease burden in Pakistan.

These Global Fund supported programs, have not only saved lives but have also strengthened health systems by building capacity, improving infrastructure, and promoting disease surveillance, and laid a solid foundation for broader public health improvements.

3.10: Private Sector Healthcare Providers:

Private sector healthcare providers, although not currently integrated into national surveillance

systems, manage a significant portion of patient care and possess valuable data. Integrating them into the national surveillance system enhances the completeness of the data.

3.11: Maternal and Perinatal Death Surveillance and Response System (MPDSR) In Pakistan

Pakistan, burdened by high maternal and perinatal mortality rates, has implemented the Maternal and Perinatal Death Surveillance and Response System (MPDSR) to address this critical issue. MPDSR aims to improve maternal and newborn health through systematic data collection, analysis, and response to deaths during pregnancy, childbirth, and the first week of life. Here's a detailed look at MPDSR in Pakistan:

MPDSR works across facilities, districts, and the entire country. Hospitals review each maternal and perinatal death, then local committees analyze trends and suggest solutions. A national committee oversees the whole system, offering guidance and sharing best practices for improvement.

Improving maternal and newborn health faces hurdles. Gathering reliable data is difficult, especially in areas lacking resources. Healthcare workers might need training to properly assess data and make changes. Including communities is key for better results. Long-term funding and commitment are crucial to maintain the system.

Despite challenges, MPDSR offers a promising approach to improving maternal and perinatal health in Pakistan. By strengthening data collection, analysis, and response mechanisms, MPDSR can contribute to saving mothers' and newborns' lives and ultimately achieve better health outcomes for all. MPDSR is a dynamic system, and its effectiveness relies on continuous improvement and adaptation to the evolving needs of Pakistan's maternal and newborn health landscape.

3.12: Integrated Reproductive, Maternal, Newborn, And Child Health (IRMNCH) Program in Punjab, Pakistan

Punjab, Pakistan, faces significant challenges in ensuring accessible and quality healthcare for mothers and children. The Integrated Reproductive, Maternal, Newborn, and Child Health (IRMNCH) program aims to address these challenges by providing a comprehensive and integrated approach to healthcare for mothers, newborns, and children under five years old. The objectives of the program are to reduce maternal and child mortality and morbidity, improve access to quality reproductive, maternal, neonatal, and child health services, strengthen the healthcare system through capacity building and service delivery improvements, and promote healthy practices and behaviours among communities. Key components of the program include providing antenatal care with regular check-ups and nutritional guidance, ensuring skilled birth attendance, equipping health facilities with Emergency Obstetric and Neonatal Care (EmONC), vaccinating children against preventable diseases, offering routine child health services, providing access to family planning methods, and mobilizing communities through awareness campaigns and peer support groups.

Punjab has seen a positive shift in maternal and child health. There's been a notable decrease in both mothers and infants lost during childbirth. This coincides with more women receiving prenatal care from qualified professionals, better childhood vaccinations, and increased access to family planning resources.

The IRMNCH program offers a promising framework for improving maternal and child health in Punjab, Pakistan. By addressing the current challenges and continuously adapting to evolving needs, the program can contribute significantly to achieving better health outcomes for mothers and children across the province.

3.13: Other Potential Stakeholders:

• **Academia:** Universities and research institutions play a crucial role in generating evidence and developing interventions related to mortality. Institutions like Health Services Academy (HSA), University of Health Sciences (UHS), Aga Khan University (AKU), University of Lahore (UOL), and Dow University of Health Sciences (DUHS) are at the forefront of this effort. AKU, for example, has conducted research on the impact of air pollution on mortality rates, while UOL has investigated the effectiveness of community-based interventions in reducing maternal mortality. These research efforts inform policy changes and guide the development of targeted interventions aimed at reducing mortality across the nation.

• **Community-based organizations:** These local organizations often work directly with vulnerable populations and can provide insights into local mortality patterns and needs.

Strengthening collaboration and coordination among all stakeholders is essential to build a robust and comprehensive mortality surveillance system in Pakistan. This will ultimately lead to improved data accuracy, better understanding of mortality patterns, and informed decision-making for effective public health interventions.

4. Efforts Being Made By Government Of Pakistan

The need for an efficient and comprehensive Mortality Surveillance System (MSS) in Pakistan has become increasingly evident, considering the country's large population and diverse healthcare challenges. This is further underscored by the absence of an existing system for collecting mortality data, determining major causes of deaths, analysing trends, and disseminating findings for policy and decision-making.

To address this critical gap, the Government of Pakistan, in collaboration with international partners and organizations, engaged in strengthening of the disease surveillance system and the activities / programs involved in collecting mortality data.

These efforts encompass:

4.1: Improved Disease Surveillance

• Enhanced healthcare professional capacity: Strengthening the training and skills of healthcare professionals in early disease detection and reporting.

• Standardized reporting system: Implementing a standardized system for consistent and accurate data collection and reporting across the healthcare system.

• Digital platforms: Leveraging digital platforms like IDSR and DHIS-2 to streamline data collection, improve data quality and timeliness, and facilitate information sharing.

4.2: Strengthened Coordination and Collaboration

• Inter-level collaboration: Fostering closer collaboration between different levels of the healthcare system to ensure effective data flow and information sharing.

• Stakeholder engagement: Engaging diverse stakeholders, including healthcare professionals, policymakers, and public health experts, in the development and implementation of the MSS.

4.3: Centralized Data Management

• National health database: Establishing National Health Data Center (NHDC) as a centralized database for health data to enable efficient data management, analysis, and reporting.

• Comprehensive data insights: Providing a comprehensive picture of health indicators, including mortality data, to identify priority areas for intervention and inform evidencebased decision-making.

4.4: Initiative for Expansion of Public Health Surveillance

• Development of five years IDSR road map is under progress which focuses on expansion of disease surveillance system to tertiary healthcare level.

• Integration of vertical programs with IDSR is also planned.

• Capacity enhancement and strengthening of event-based surveillance and community-based surveillance is proposed.

In spite of all these efforts, there is a lack of a comprehensive surveillance system that collects mortality data, highlights major causes of deaths, analyzes mortality data to see the pattern and trends, or disseminates the final results for policy and decision making. Therefore, there is a dire need to establish a robust and reliable system for monitoring and analyzing mortality trends. This will enable evidence-based decisionmaking and targeted interventions to improve public health outcomes in the country.

5. Mortality Surveillance Framework-Pakistan

Vision:

To strengthen Pakistan's public health system by implementing a timely and comprehensive mortality surveillance system. This system will ensure accurate data collection and insightful analysis, ultimately guiding impactful policies and interventions aimed at reducing mortality rates. By leveraging this robust system, we envision a future marked by improved health indicators and significantly lower mortality rates, serving as a testament to Pakistan's sustained progress and well-being.

Mission:

To establish a robust and comprehensive Mortality Surveillance System (MSS) in Pakistan that facilitates timely data collection, identifies leading causes of death, analyzes and interprets the data, makes data available for decision- and policymaking, and disseminates the reports to relevant stakeholders, through collaborative partnerships with healthcare providers, government agencies, and other stakeholders. The MSS will empower evidence-based decision-making and interventions, ultimately contributing to improved public health outcomes across the nation.

Rationale:

The absence of a comprehensive and reliable mortality surveillance system in Pakistan poses a significant challenge to Pakistan's public health efforts. Existing data sources, including hospital records and death certificates, are often incomplete, inaccurate, or inaccessible, hindering effective planning and intervention strategies. Bridging this critical data gap necessitates the establishment of a robust mortality surveillance system. Pakistan Maternal Mortality Survey (PMMS) 2019 reported that Pakistan experienced a concerning rise in maternal mortality rates in 2019 with an estimated 186 maternal deaths per 100,000 live births. This increase was attributed to several factors, including inadequate access to quality prenatal and postnatal care, insufficient emergency obstetric services, and prevalent socio-cultural barriers that prevent timely medical intervention. The lack of a reliable mortality surveillance system exacerbated the situation by failing to provide accurate, real-time data on maternal deaths, which hindered the ability to identify high-risk areas and implement targeted interventions. Therefore, there is dire need to establish a comprehensive and reliable mortality surveillance system in Pakistan.

The mortality surveillance system would compile, harmonize, and provide timely and accurate information on mortality rates, causes of death, and demographic characteristics. Such data would be invaluable for:

- **Developing targeted prevention and treatment strategies:** Leading to a reduction in disease burden and improved health outcomes for the population.
- **Informing evidence-based policymaking and resource allocation:** Ensuring optimal utilization of resources and implementation of effective public health interventions.
- **Guiding targeted interventions to reduce health inequalities and ensure equitable access to healthcare services:** Promoting comprehensive healthcare for all segments of the population.

Furthermore, a robust mortality surveillance system aligns with IHR-2005 and Pakistan's commitment to achieving the Sustainable Development Goals (SDGs). It would enable effective

monitoring of progress towards these goals, such as reducing maternal and child mortality rates, improving access to healthcare services, and addressing non-communicable diseases. Regular data collection and analysis would facilitate the evaluation of interventions' effectiveness and inform necessary policy adjustments to achieve these critical targets.

Beyond national benefits, establishing a reliable mortality surveillance system also aligns with international reporting requirements and facilitates collaboration with global health organizations. Accurate mortality data enables Pakistan to contribute meaningfully to global health initiatives, participate in research collaborations, and benefit from international expertise and resources.

In conclusion, addressing the critical need for a comprehensive mortality surveillance system is essential for improving public health outcomes in Pakistan and contributing to global health initiatives.

5.1. Strategic Objectives of the Mortality Surveillance System

The strategic objectives for the Mortality Surveillance System (MSS) in Pakistan aim to create a comprehensive and reliable system that can significantly improve public health outcomes. These objectives focus on:

5.1.1. Establishment of a Standardized and Integrated System

Implement a standardized and integrated Mortality Surveillance System (MSS) across Pakistan. This system will ensure accurate recording, classification, and reporting of all deaths within the country. Standardization will enhance data consistency and comparability, facilitating improved analysis and informed decision-making.

5.1.2. Enhance Data Collection and Reporting

Implement electronic death registration systems, train healthcare professionals on accurate death certification, and establish efficient data transmission and reporting channels. These measures will increase death capture rates and minimize underreporting or misclassification.

5.1.3. Improve Data Analysis and Utilization

Establish a centralized database for mortality data storage and management, implement data analysis tools and techniques, and disseminate timely, relevant reports to key stakeholders. This will enable early detection of outbreaks and disease trends. By analyzing death patterns, health authorities can identify unusual occurrences or case increases, enabling prompt investigation and response to prevent further disease spread.

5.1.4. Evaluate Impact

Track disease and mortality rates before and after public health interventions to assess their effectiveness. This information will help identify successful strategies and inform future policy development.

5.1.5. Enhance Preparedness and Response

Continuously monitor disease and mortality patterns to strengthen the healthcare system's preparedness and response capabilities. Timely identification of emerging threats will facilitate resource allocation and implementation of appropriate control measures.

5.1.6. Strengthen Collaboration and Coordination:

Foster collaboration and coordination among healthcare providers, government agencies, researchers, and international organizations involved in mortality surveillance. This will leverage expertise, resources,

and best practices, contributing to a more effective and sustainable MSS.

5.1.7. Support Research and Policy Development

It will serve as a valuable resource for research and policy development. Researchers can analyze data to identify risk factors, evaluate interventions, and contribute to evidence based public health decision-making.

5.2: Targets:

The overall target of this framework is:

To establish a **robust and comprehensive mortality surveillance system.** This system will focus on **collecting accurate and standardized data** on deaths throughout the country. By analyzing this data, the system will be able to **identify the leading causes of mortality** and **track trends** over time. This information will be **shared and communicated effectively** among various stakeholders, including healthcare professionals, policymakers, and the public. Ultimately, the system aims to **strengthen collaboration** across different sectors and **support evidence-based policymaking** to improve public health outcomes in Pakistan.

The objective-wise targets planned to be achieved in next five years i.e. by end of 2028 are as follows:

Establishment of a Standardized and Integrated System:

• Standardized data collection tool will be developed/adopted for collection of the data, and the data will be collected through a digital platform primarily using digital platform (DHIS-2) of Integrated Disease Surveillance and Response System (IDSR) of Pakistan.

• Existing death reporting tools will be reviewed to develop a standardized mortality data reporting tool form with incorporation of necessary variables.

• The healthcare workers at all data reporting sites will be trained for collection and reporting of the mortality data. Training will also be provided for using standardized coding procedures / guidelines (ICD-11 or latest).

• Mobile applications will be developed for data collection and reporting. The possibility of using artificial intelligence for automated data coding and outbreak detection will be explored. The existing DHIS 2 Android app will be customized.

• Different data sources / programs / projects / stakeholders collecting mortality surveillance data like CRVS, MPDSR, NADRA. Lady health worker program, HCCs, Ambulatory services etc. will be engaged through MoUs / agreements for integration and linking of the data.

• National data quality control guidelines and SOPs will be developed to monitor the quality of the data.

• Capacities will be developed, and dashboards will be made for real-time data reporting and real- time data analytics for detecting unusual mortality increases at national and sub-national level.

• Mortality data will be reviewed as per timeline of public health bulletin (weekly) with recommended public health actions to be taken, at all levels.

Enhance Data Collection and Reporting:

• The data collection will be enhanced by increasing the training base by including healthcare workers, lady health workers, staff of programs working in disease surveillance, staff of emergency responders. The trainings will be carried out on data tool, data collection, data reporting, and ICD coding.

• Data will be taken from different data sources like primary healthcare facilities, tertiary healthcare facilities, private healthcare facilities, civil registration and vital statistics programs, maternal neonatal and child health programs, disease specific programs, emergency response organizations, ambulatory services, philanthropic organizations etc. by integration of these data sources with the mortality surveillance system.

• The advanced technologies like mobile apps and other digital technologies to collect the relevant data

from data sources will be developed and used. The existing DHIS-2 Android app will be customized to further enhance it capabilities, Mortality data reporting tool and verbal autopsy tool will be integrated directly with the app.

• The digital technologies will be developed for monitoring of print media, electronic media, and social media platforms, and will be used for capturing mortality data from these platforms.

• The data cleaning techniques will be developed and applied to address missing values and inconsistencies.

• The mechanism will be developed for the following:

  o Monitoring and evaluation of data and reporting sites to improve data quality, completeness and timeliness.

  o Conduction of regular data audits and implementation of corrective measures to address data discrepancies.

  o Long term storage and management of data along with data security and privacy.

Improve Data Analysis and Utilization:

• The training of data analysts and relevant healthcare staff will be carried for analysis of data at facility level, tehsil level, district level, provincial level, and national level including parastatal hospitals.

• Strengthen analytical capabilities at national and sub-national level for in-depth analysis of mortality data by various factors including age, sex, geography, and causes of death.

• The advanced data analytics tools that is already available in DHIS-2 will be modified for improved trend analysis, outbreak detection, and identification of leading causes of death at national and sub-national levels.

• The mechanism will be developed with provinces and districts to conduct in-depth reviews of leading causes of death to identify contributing factors, high-risk groups, spatial patterns of mortality for specific diseases, and potential environmental or social determinants etc.

• The risk factor profiles for specific diseases and populations will be developed.

• The advanced data analytic and artificial intelligence technologies will be used to develop predictive models to forecast future trends.

• The standardized mortality reports will be developed and disseminated to various stakeholders like healthcare professionals, health authorities, policymakers, and communities etc.

• The mechanism will be developed to take community feedback for development and implementation of interventions.

• Based on the collected and analyzed data, training modules, resource materials, and simulation exercises will be developed.

Evaluate Intervention Impact:

• The objectives and indicators will be developed for measuring the impact of each public health intervention on mortality rates.

• The impact of interventions on mortality rates and health outcomes will be evaluated by using appropriate evaluation methodologies like interrupted time-series analysis etc.

• The effectiveness of the MSS in achieving its objectives will be evaluated and areas for improvement will be identified.

• The cost-effectiveness analyses will be conducted for the evaluated interventions, and comparison of the costs of interventions with their associated health benefits in terms of mortality reduction and improved quality of life will be conducted.

• Inform resource allocation decisions based on evidence of cost-effectiveness.

• The mechanism will be developed to gather feedback from stakeholders for improvement of the intervention implementation and evaluation process.

• The findings will be shared relevant stakeholders like health authorities and policymakers etc. for informed decision making and resource allocation.

Enhance Preparedness and Response:

• A real-time early warning system based on MSS data will be developed and implemented to detect unusual mortality increases and potential outbreaks.
• The mechanism and clear protocols will be defined for issuing alerts and communicating risks to relevant authorities and communities.
• The simulations and tabletop exercises will be conducted to test and improve the early warning and response system.
• The rapid response teams will be trained for outbreak investigation, contact tracing, and case management.
• The joint training exercises of different sectors will be conducted for multi-sectoral outbreak response.
• The capacity at subnational level within local health authorities will be developed for independent epidemic preparedness and response.

Strengthen Collaboration and Coordination:

• A comprehensive stakeholder engagement strategy will be developed to foster communication and information sharing among different stakeholders.
• The formal and informal platforms will be developed for regular dialogue among different stakeholders, collaboration, and identification of areas of common interest and priorities. This will facilitate the development of collaborative programs and interventions addressing key health challenges.
• Joint evaluations and comprehensive assessment of the impact of the collaboration on health outcomes will be conducted.

Support Research and Policy Development:

• The mechanism will be developed to collaborate with different academic institutions and research partners on data analysis projects and knowledge exchange programs.
• Partnerships and collaborative research projects on mortality surveillance and health interventions will be developed.
• The stakeholder consultations will be organized to gather inputs from policymakers, clinicians, academia, and communities etc. for defining research priorities and their implementation.
• The plans/projects will be developed to Support research focused on effective implementation of evidence-based interventions in diverse settings.
• Conduct research on overcoming barriers to policy implementation and scaling up successful interventions.
• Facilitate capacity building for healthcare professionals and policymakers on implementing evidence-based practices.

5.3: Core Guiding Principles:

Pakistan faces a complex landscape of health challenges, with significant disparities in mortality rates across different regions and populations. To effectively address these issues, a robust and comprehensive mortality surveillance framework is crucial. This framework should be guided by following key principles:

5.3.1: Comprehensiveness, Inclusiveness and Equity:

To gain a comprehensive understanding of mortality, we need to capture and analyze deaths across all populations, regardless of location, socioeconomic background, or marginalization. This includes ensuring everyone has equal access to reporting mechanisms, overcoming barriers like gender, income, and cultural practices. By analyzing this data for disparities, we can identify vulnerable groups and develop targeted interventions to improve health outcomes.

5.3.2: Data Quality and Accuracy:

To ensure reliable and complete data, we can collect information using consistent methods across various sources. Combining databases like CRVS, MPDSR, and IRMNCH along with multiple data collection approaches, including registrations, surveys, and autopsies, will capture a wider picture. Rigorous quality control measures will guarantee data accuracy, timeliness, and completeness. Finally, transparency and accountability in data management will build trust in the process.

5.3.3: Real-Time Data Monitoring, Robust Analysis, Interpretation, And Early Warning:

To effectively combat mortality, we need better data. Standardized cause-of-death coding allows global comparisons. Real-time analysis helps us spot outbreaks quickly. Data analysis can reveal inequalities, guiding targeted action. Knowing the biggest killers lets us prioritize public health programs. Clear communication gets alerts to the right people fast. And digital tools can supercharge our monitoring and early warning systems.

5.3.4: Monitoring And Evaluation Mechanism:

To ensure our system's success, we will establish a monitoring and evaluation framework and implementation plan with measurable goals, data collection methods, and reporting. We will leverage technology for timely and efficient processingand clear data visualization. Finally, regular outside reviews will assess our overall effectiveness, and we'll adapt our tracking methods as needed to stay on target.

5.3.5: Transparency And Accountability:

We can improve transparency and collaboration by regularly sharing anonymized mortality data in reports, easy-to-use dashboards, and open platforms. By sharing insights with policymakers, healthcare workers, and the public, we can all work together to improve health outcomes and ensure everyone has access to this vital information. To safeguard privacy and ethical use of this data, we need clear guidelines in place.

5.3.6: Evidence-Based Decision-Making:

To improve public health outcomes, we need to make death data easily available for policymakers, healthcare workers, and researchers. By analyzing this data, we can pinpoint the main causes of death and develop effective interventions based on evidence. Finally, we should track how these interventions affect mortality rates and adjust our strategies as needed, using the data as our guide.

5.3.7: Ethical Considerations and Data Privacy:

To safeguard privacy and security, data collection, analysis, and sharing should follow ethical guidelines. This includes obtaining informed consent upfront and respecting cultural nuances. Additionally, involving the community in data governance fosters trust and empowers them.

5.3.8: Sustainability And Long-Term Commitment:

To keep this system running smoothly for the long haul, we need a solid plan for upkeep and maintenance. That means training our healthcare and data teams, using the latest tech for gathering and using information, and constantly checking how well it's all working. By working together across different areas, we can make sure this system has all the support it needs to thrive.

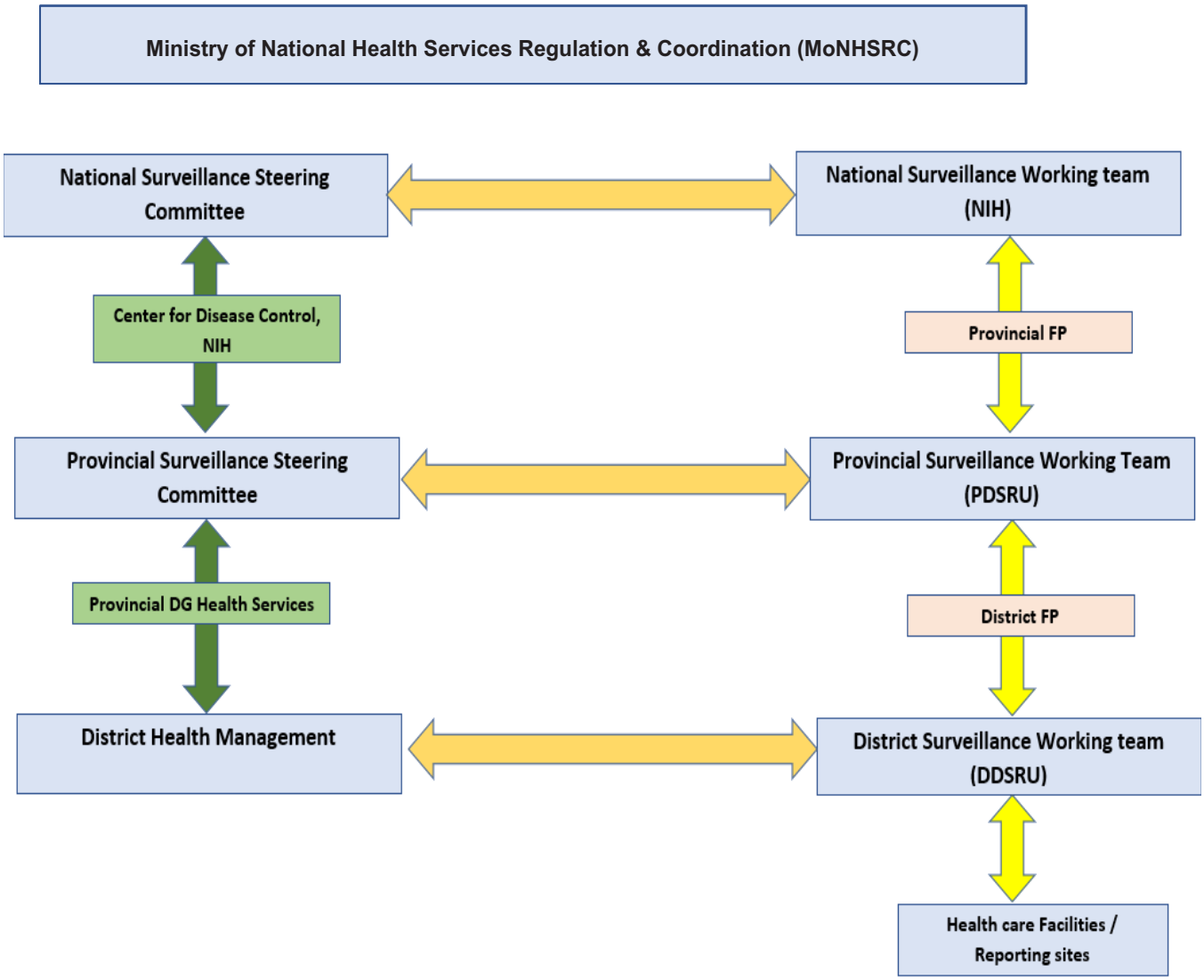
IMPROVED HEALTH OUTCOMES:

Ultimately, the system should strive to improve health outcomes for all Pakistanis by reducing mortality rates and promoting overall well-being.

- Improved healthcare systems: Guide with the strengthening of healthcare services across the country.
- Evidence-based policy formulation: Inform policy makers on healthcare access, disease prevention, and resource allocation, leading to more effective interventions and policies.
- Sustainable health for all: By tackling both immediate and underlying factors, the framework should contribute to a healthier future for all Pakistanis, regardless of their background, location, socio-economic

5.4. GOVERNANCE STRUCTURE:

The proposed governance structure will be as follows:



6. Paving Pathway

BRIEF REPORT ON NATIONAL MORTALITY SURVEILLANCE FRAMEWORK WORKSHOP / STAKEHOLDERS MEETING

Towards Improved Health Outcomes: National Mortality Surveillance Framework Workshop Garners Stakeholder Feedback

A National Mortality Surveillance Framework Workshop/Stakeholders Meeting was held on February 27, 2024, at the Marriot Hotel, Islamabad. This initiative aimed to engage diverse stakeholders and refine the draft mortality surveillance framework for Pakistan. The workshop brought together representatives from various organizations, including the Ministry of National Health Services, Regulation & Coordination (MoNHSRC), World Health Organization (WHO), District Health Office (DHO), and several others.

6.1: Workshop Overview

The workshop aimed to engage stakeholders and gather feedback on the ***draft National Mortality Surveillance Framework.*** Diverse participants from various organizations, including government ministries, NGOs, and international agencies, actively participated in discussions.

6.2: Key Discussions:

- **Stakeholder Initiatives:** Representatives from various organizations shared their ongoing initiatives related to disease and mortality surveillance. These initiatives included civil registration projects, data integration efforts, and disease-specific surveillance programs.
- **Draft Framework Feedback:** Participants commended the framework's comprehensiveness and suggested including data from various sources, such as primary, secondary, and tertiary healthcare facilities, vertical programs, and private healthcare providers. They also emphasized the need for standardized data collection tools, capacity building for personnel, and a sustainable electronic platform for data management and analysis.
- **System Design and Implementation:** Suggestions included establishing a sustainable electronic platform with data visualization capabilities, engaging relevant units in data analysis and public health interventions, and involving provincial healthcare commissions in the framework's implementation.
- **Data Utilization and Policy Development:** Participants emphasized regular data analysis and dissemination to inform decision-making and public health interventions.

They also proposed regular meetings to review data, develop policies, and engage with relevant government bodies for policy formulation.

6.3: Next Steps:

Based on the workshop discussions, the following steps were proposed:

- **Refine the draft framework:** The suggestions and feedback from the workshop will be incorporated into an updated draft.
- **Gather further input:** The updated draft will be circulated to participants for further feedback and collaboration.
- **Continued engagement:** Participants expressed interest in further discussions and opportunities for collaboration to refine the framework and develop an implementation plan.

6.4: Conclusion:

The workshop fostered a shared understanding of the challenges and opportunities surrounding mortality surveillance in Pakistan. It marked a significant step towards developing a robust and sustainable framework to improve health outcomes for the country's citizens. The strong commitment and collaborative spirit of the participants will be crucial for successful implementation of the framework.

The detailed report and list of participants of this workshop is attached at AnnexureVII.

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8. Annexures

Annexure-I

PUNJAB: THE DETAILED SWOT ANALYSIS OF DISEASE SURVEILLANCE SYSTEM OF PUNJAB PROVINCE IS AS FOLLOWS:

a. Structure / Infrastructure

	Strengths	Weakness	Opportunity	Threats
Provincial Level	PDSRU established. DHIS-2 working. EMR under progress Public Health Laboratory established	Dedicated resources for functionality of PDSRU & DHIS2 not available Integration of different system not completed. Dedicated space to perform different functions not available DHIS2 expert support not available for MIS Cell	Support through PC-1 Temporary support from partners Partner support for Hardware & DHIS2 software support Refurbishment of PDSRU Strengthening capacity of PDSRU for prompt analysis & support of Districts Partners may chip in for dedicated PHL at provincial & divisional level	Lack or varied levels of ownership. Sustainability issues

	Strengths	Weakness	Opportunity	Threats
District Level	DDSRUs established	No dedicated staff in DDSRU Inconsistent referral mechanism	Support from Government through PC-1 Districts may support. Strengthening of referral system	
Community Level	Infra-structure available even at Union Council level BHUs, RHCs, THQs, DHQs & Teaching Hospitals LHWs & Outreach teams at community level	Compromised Capacity of Health Care Workers Training in Teaching Hospitals & Community Workers	Continuous process for capacity building through Partners Teaching Hospitals & Community Workers required to be trained	

b. Core Surveillance functions.

	Strengths	Weakness	Opportunity	Threats
Day to day real time surveillance	PDSRU and DDSRU DHIS2 / DSS /EMR	Program specific, absence of SOPs, Frequent transfer and posting Inconsistent coordination with One health stakeholders	Engaging One health stakeholders, Partners	Insufficient work force Sustainability issues
Linkages to the national / provincial PH lab network	Infrastructure, dedicated team, Different Project	Communication gap, VP Linkages with teaching hospital No proper referral system	Partners support Proper IT based referral system is need of the day	Lack or varied levels of ownership
Analysis of data, outbreak detection, and support to the lower level for outbreak Investigation and control	Trained DDSRU FP Monitoring by PDSRU Trained FP & District team & DHOs, PDSRU, DGHS	Shortage of dedicated staff. Logistic issues like vehicle, POL, computers etc.	Sensitization of higher authority for dedicated staff and logistics May get support from developing partners.	Logistic issues Additional role & duties instead of IDSR
		Adhocism / case-based arrangements	Allocation of resources by Government	

	Strengths	Weakness	Opportunity	Threats
Data management, data analysis, and interpretation at Health Facility level	Analysis at HF / DDSRU / PDSRU DHIS 2 Advance Analytics at PDSRU / DDSRU Trained FETP fellows at PDSRU	Capacity of available staff at District levels Logistic issues HR problems	Posting / Filling of DDRU posts Trainings of Staff on advanced analytics Introduction of R- for automation of reports	Transfers of trained staff on advance analytics Additional role & duties instead of IDSR
Investigation and confirmation of case / event / outbreak (includes lab confirmation)	Trained IDSR staff Trained DDSRU staff	Lack of Trained Lab Staff on priority Diseases Compromised availability of Testing Kits Lack of transport media Multi-sectoral RRT teams' trainings	Trainings of Lab staff Multisector Coordination Training of RRTs in Districts	Additional role & duties instead of IDSR
Response (coordinated mobilization of resources and public health action)	Logistic support from District/NIH Trained DDSRU FP Trained HF Staff	Late response from Districts due to others health related tasks Teaching Hospital issues & training of staff	Logistic support from NIH Engagement of Partners Financial support from Government	

	Strengths	Weakness	Opportunity	Threats
Reporting / Feedback / action	Trained staff at HF, DDSRU FP, District Surveillance staff, DHIS 2 staff. Reporting on daily basis Weekly bulletins at provincial & District levels Report sharing on email & WhatsApp groups. Advisories, Alerts, Guidelines, Directions	Absence of well-defined mechanism & format for report sharing Automation of weekly / monthly reports Lack of coordination mechanism between surveillance staff Interrupted weekly reports. Engagement of Tertiary care Hospitals, other sectors	Integration with vertical programs, EMR with DHIS2 Strengthening of capacity for advanced analytics Capacity to generate automated reports using digital platforms. Surveillance Coordination Committee, Weekly Coordination meeting with sharing of minutes	Lack of interest of Stake holders
	Base line surveys conducted by NIH/PARTNERS	Lack of sharing of Base line surveys conducted by NIH/PARTNERS	conducted by NIH/PARTNERS	Lack of funds

c. Support functions.

	Strengths	Weakness	Opportunity	Threats
Human resource (a permanent cadre of skilled staff is key and staffing levels should be based on need and a career structure in order to retain staff)	Trained staff in disease surveillance, outbreak investigation, reporting in DHIS-2 DDSRU FPs trained. Staff placed at DGHS office and has access to higher authorities	DDSRU under staffing Additional duties / multiple roles	DDSRU may be strengthened with permanent staff, analysts etc. Separate Financial Allocations for DDSRUs Inducted / Trained FETP fellows in DDSRUs	Frequent posting / transfer of trained staff Additional role & responsibility to deputed staff
Training (surveillance staff and laboratory staff)	IDSR Manual for training available Training on IDSR completed in 18 out of 36 Districts by training 1559 Health Care Providers Training in remaining 18 Districts is in process	Trainings in Tertiary Care Hospitals Training of PH Lab Staff Training of RRTs	Partners support NIH support Linkages at District, Provincial & Federal level Development of specimen Transport mechanism	
	Higher level officers are engaged for continuous monitoring	Nonavailability of vehicle /logistic	Logistic support from partners and NIH Allocation of resources	

	Strengths	Weakness	Opportunity	Threats
Other resources (equipment etc.)	Desktop at PDSRU / DDSRU available	Non availability of gadgets at HF levels	Support from partners and NIH	
Laboratory capacity, quality and network integration	PHL available at Provincial level	Compromised function of PHL at Provincial level Kits issues	Separate / dedicated Provincial PHL Establishment of Divisional PHLs	

Annexure-II

SINDH: THE DETAILED SWOT ANALYSIS OF DISEASE SURVEILLANCE SYSTEM OF SINDH PROVINCE IS AS FOLLOWS:

a. Structure / Infrastructure

Strengths	Weakness	Opportunity	Threats
PDSRU and DDSRU with dedicated space and equipment Sanctioned post at PDSRU Nominated focal person @ DDSRU. Well established Linkages to the national / provincial PH lab network Analysis of data @ District Provincial DSRU support to the district for OBI and control	Absence of guidelines or SOPs for Command-and Control Process for Coordination and Reporting Limited coordination and reporting with another program and No Feedback within and to other government sectors Limited functionality of PH reference lab due to issue in ownership, 3M, utilization by DHOs Absence of Dedicated staff, laptop internet for data analysis	Partner interest to improve the Coordination and Reporting Role of Partner staff in Advocacy of higher authority Clear Command and Control Process for Coordination and Reporting Technical /financial Support of partner staff	Change of priorities of partners

b. Core Surveillance functions.

Strengths	Weakness	Opportunity	Threats
IDSR trained staff at PDSRU/DDSRU/HCF Community, LHWs, Surveillance staff DHIS 2 daily/weekly basis Trained FETP Frontline RRT in Districts Logistic support from District/NIH Trained DDSRU FP in Frontline course/IDSR Base line surveys conducted by NIH/PARTNERS Risk profiling conducted by PDMA	Transfer of trained staff from HCF Lack of coordination mechanism between surveillance staff Availability of computers /Tablets at DDSRU/PDSRU Daily/Weekly data analysis /interpretation Lack of testing Kits Lack of transport media Multisectoral RRT teams' trainings Late response from Districts due to others health related tasks Late feedback from all tiers Lack of sharing of Base line surveys conducted by NIH/PARTNERS No risk profiling at District level	Development Partner interest to improve the core function. Role of Partner staff in Advocacy of higher authority Clear Command and Control Process for Coordination and Reporting Technical /financial Support of partner staff	Change Political commitment and Development partner priority

c. Support functions.

Strengths	Weakness	Opportunity	Threats
Health Management cadre Trained team off PDSRU for Training (surveillance staff and laboratory staff) Dedicated and established M& E system available at Government level	Limited utilization of HMC Absence of permeant post for IDSR at District levels Frequent transfer Multiple task/ overburden staff. Carrier structure missing Limited appreciation of No standardized format No National Manual Absence of ToT of national or provincial trainer, Mannual Non utilization of M & E system for IDSR Non availability of vehicle /logistic support	Reward & appreciation by donors/ organization. Certificate/advanced course admission for dedicated and sincere staff with the support of donor Policy advocacy for carrier structure Donor /Partners supported in resources and material provision. Curriculum developed for implementation. Free online course for training available USAID dedicated M&E system available	Change Political commitment and Donor priority

Annexure-III

KHYBER PAKHTUNKHWA: THE SWOT ANALYSIS FOR DISEASE SURVEILLANCE SYSTEM OF KPK IS AS FOLLOWS:

a. Structure / Infrastructure

Strengths	Weakness	Opportunity	Threats
IDSR is established and operationalized in all districts (including NMDs) under the supervision of DG Health KP Trained, Professional and Dedicated Human Resource at Provincial and district level (PDSRU & DDSRUs) Public Health Surveillance Act 2017 Provincial Public Health Reference lab & Regional labs More than 2200 health professional on priority infectious disease State of the art DDSCs established at all districts level with IT equipment's. DHIS2 software for recording and reporting data for disease surveillance, alerts and outbreaks. Active Response to the disease Alerts & Outbreaks at Provincial & District	IDSRS-KP PC-I is approved till t June 2025 Sustainability and Regularization of trained Human Resource of IDSRSKP Limited data Integration with vertical program Installation of Tablets and Internet Support at health facilities In revised PC-I of IDSR-KP, no financial support is available for Maintenance & POL of district vehicles, which is a challenge during timing response outbreak investigation activities. Only few infectious diseases reporting from MTI's, Private Labs and Private Hospitals (Dengue, CCHF)	IDSR-KP have strength of trained Human Resource PPHRL is serving a leadership role to build the capacity of regional labs and public health lab network. DHIS2 software used for IDSR data reporting have the capacity of advance data analysis. IDSR-KP have expert Data Analysts and IT team who can manage inhouse DHIS2 server. IDSR-KP team working on generating DHIS2 automated Weekly Epidemiological	Compromised government ownership in a complex political situation. Sustaining and retention of trained Human resource of IDSR is become a challenge because staff is still on project salary mode. IDSR PC-I funds are so limited, without partners support it become difficult to handle potential outbreak response. Sustainability of PHRL and its trained staff Provision of smooth release of funds is a challenge.

Strengths	Weakness	Opportunity	Threats
Level Vehicles (01 for each district) for surveillance and response activities Active Coordination with PHRL -KMU Peshawar and NIH, Islamabad for confirmation of disease from Public Health Laboratory Weekly reporting of 41 communicable diseases from Health Facility level to PDSC (DHIS 2 & DHIS android app) From 2019 to 2023, more than 300 alerts and outbreaks responded by IDSR - KP IDSR -KP published 150 weekly Epidemiological Bulletins from the year 2021 till date. IDSR -KP team involved in generating Daily and Weekly Situational Reports for COVID - 19, Flood, Dengue, AWD (Cholera), CCHF etc. IDSR system used as Emergency information system in Floods of 2022		Bulletin IDSR-KP is working on Integration with Vertical program (i-e, DHIS, IVC/IVM, HIV, TB etc.) for quality reporting mechanism. Availability of legal tool, Public Health Act 2017 and IHR all core components are achievable	Implementation of Public Health Act 2017 and IHR

Annexure-IV

BALOCHISTAN: THE SWOT ANALYSIS OF DISEASE SURVEILLANCE SYSTEM OF BALOCHISTAN IS AS FOLLOWS:

a. Structure / Infrastructure

Strengths	Weakness	Opportunity	Threats
Strong leadership and management team. Integrated Health Monitoring Unit Experienced and skilled staff PDSRU, Divisional/ Districts Unit	Limited resources, including budget, manpower, and equipment. Transfer and postings in routine. No M&E System. Difficult to access remote areas of Balochistan	Access to funding from the government and donors Use of technology to improve communication and coordination	Change of Priorities of Partner Political instability

b. Core Surveillance functions:

Strengths	Weakness	Opportunity	Threats
Strong Surveillance Network and EWS, covering all districts and health facilities (DSOs, RRTs) DSOs in each DDSRU Timely reporting of data Commitment to data quality and improvement	Real Time Data Reporting Mechanism Lack of Proper Feedback Mechanism Connectivity Issues No Job Description (Single HCW is doing Multiple Tasks)	Collaboration with other provinces and countries to share best practices and lessons learned. Use of technology to improve surveillance, communication, and coordination	Emerging and re-emerging diseases Natural disasters Political Involvement

c. Support functions.

Strengths	Weakness	Opportunity	Threats
Dedicated and experienced staff (FETPs) Commitment to quality improvement and continuous learning	Lack of integration with other public health Need for more specialized training for staff	Capacity Building and Enhanced Standard Practices Strong coordination with other government agencies and stakeholders	Delayed Response in Outbreak situation (Logistics Issues.

Annexure-V

AZAD JAMMU & KASHMIR (AJ&K): THE SWOT ANALYSIS OF DISEASE SURVEILLANCE SYSTEM OF AJ&K IS AS FOLLOWS:

a. Structure / Infrastructure

Strengths	Weakness	Opportunity	Threats
PDSRU/DDSRU/ HFs Reporting mechanisms Connectivity/Furniture/R&R mechanisms IDSR system contributes to public awareness about disease prevention and control Microbiology lab of AIMS has significant contributory role for detection and diagnosis of Notifiable diseases	DDSRUs refurbishment in Neelum/JV/Haveli/Sudhnoti Funds (Connectivity expense), and PHL (Aims) infrastructure refurbishment is required+ Hiring of PHL HR+LIMS is still awaited. Equipment (Ups) repair, maintenance constrains. Some remote areas may lack proper infrastructure, making it difficult to establish surveillance in those regions	Ownership of DOH Need of further support/collaborations for maintenance of dedicated infrastructures from Department/ Donors side at all levels DOH to prioritize allocations for IDSR related infrastructure from existing budget. Sensitization of Higher-level stakeholders about IDSR (Distt. Managers/Provincial SHs)	Sustainability issues Rapid Turnover of managers No dedicated budget for IDSR related infrastructure Poor communication and coordination between various agencies can impede a timely response to disease outbreaks

b. Core Surveillance functions.

Strengths	Weakness	Opportunity	Threats
RRTs DHIS data staff involvement in IDSR reporting PH Labs (Mzd, Mirpur) Poonch in progress HF level weekly reporting mechanism OB response system in collaboration with Partner colleagues (WHO) e.g. Measles in Mirpur, Poonch	Ownership at all levels In remote areas, technological limitations, hindering data collection and reporting. IDSR zero reporting Delayed referral of suspected cases to PH labs Transportation of samples for suspected cases to PH labs Limited HR for data compilation (5 districts have no dedicated IDSR data person) No surveillance related dedicated person (IDSR)	Regular feedback mechanism Investing in ongoing training and capacity building for healthcare workers can enhance the effectiveness of IDSR.Improvement of IDSR based suspected cases/ timely reporting. Timely/Early referral of suspected cases samples to PH labs Integrated approach with vertical programs (e.g.) EPI Structured Monthly/Quarterly progress-based review meetings to overview progress/gaps/bottlenecks/way forward Community based surveillance/sensitization regarding IDSR related diseases/HFs through ISD approach	Rapid turnover of Managers resulting in improper reward/Accountability mechanism Fear of unreported/unaddressed possible Outbreaks Fear of wastage of available resources due to improper utilization/ Irrationalized approach Rising burden of mortalities/Morbidities especially Childhood diseases

c. Support functions.

Strengths	Weakness	Opportunity	Threats
IDSR ensures timely data collection, which is critical for early disease detection and response promotes coordination and collaboration among various stakeholders, including government agencies, healthcare providers, and community health workers. DHIS data staff involved in IDSR reporting. All districts trained (2 districts trained on Android based IDSR reporting tools) R&R tools, Hardware support, Furniture, dedicated DDSRUs District Managers FPs for IDSR Provincial FP for IDSR	lack of advanced technology and infrastructure may impede data collection and analysis. supervisory support (Dedicated vehicle, incentivized mechanism for IDSR response team) Updated IDSR case definitions resulting in a conflict-of interest b/w IDSR & other surveillance related programs Limited dedicated Data persons for IDSR (5 districts not having IDSR support Data persons) & no data person at Provincial level. Refresher/Sensitization trainings for District & Provincial IDSR related SHs Lack of dedicated support for IDSR supervision (Mobility) in districts Lack of PH Lab network integration with IDSR	Timely recruitment of pending positions regarding IDSR (Data persons, Surveillance officers, HE, Finance) for smooth service delivery True integration between IDSR & PH lab IDIMS) for having accurate/reliable data through ISD approach Involvement of related staff other than IDSR (e.g. EPI,DHIS, strong Managerial level supervision mechanism at Districts/Provincial level Timely availability/Dissemination of latest guidelines/ instructions from National to Provincial/district/HF Community mobilization/sensitization/Awareness regarding IDSR related diseases through ACSM activities	Delay in the reporting, analysis, alert generation, Case response b/c of limited IDSR staff. Irrationalized services by available staff due to lack of dedicated supervision for IDSR component Delayed response for any OB situation due to constrains at Provincial/ district levels (Mobility, Financial constrains) resulting in increase in the number of cases for that very disease. Difficulty at district level for RRTs to notify the suspected cases as confirmed due to non-availability of updated IDSR case definitions (e.g. VPDs) Under reporting of suspected cases to PH labs resulting in delayed results in order to early initiation of a case response/OB response

Annexure-VI

GILGIT BALTISTAN: THE SWOT ANALYSIS OF DISEASE SURVEILLANCE SYSTEM OF GB IS AS FOLLOWS:

a. Structure / Infrastructure

Strengths	Weakness	Opportunity	Threats
Enough Infrastructure Regional and district HF & lab network Training completed. Sufficient HR Good private sector as compared to government sector	Financial constrains. Nonexistence of proper Surveillance & support Functions (Vert. Programs) Poor district Lab capacity/ network Shortage of Technical HR	Good community support Proper community based PHC coverage and Private clinics (Data) Good Intersectoral coordination Expanding Lab diagnosis to other ISDR disease list.	Poor Data reporting & management Poor OB Investigation and response Multiple Reporting and surveillance systems exists

Brief Report on Workshop / Stakeholders Meeting

Annexure-VII

This activity was organized to engage with diverse stakeholders working in disease and mortality surveillance. The goal was to discuss the mortality surveillance framework currently under development and gather their valuable inputs and suggestions for its improvement.

Proceedings of the Workshop:

The National Mortality Surveillance Framework Workshop formally commenced with an introduction of the participants. A diverse range of stakeholders representing organizations like the Ministry of National Health Services, Regulation & Coordination (MONHSRC), Ministry of Planning, Development & Special Initiatives (MOPDSI), National Database & Registration Authority (NADRA), Maternal & Perinatal Death Surveillance & Response (MPDSR), World Health Organization (WHO), Population Council, UK-HSA, JSI Inc./USAID, Chemonics, International Committee of the Red Cross (ICRC), District Health Office (DHO), Pakistan Institute of Medical Sciences (PIMS) etc. actively participated in the workshop.

The workshop unfolded as follows:

I. Opening Session: The Program Manager from GHD|EMPHNET, provided an overview of GHD|EMPHNET's work, its collaborations, and ongoing public health initiatives in Pakistan.

ii. Introductory Session: This session offered an in-depth exploration of mortality surveillance, explained the US-CDC efforts in Pakistan for mortality surveillance and shared insights from the experiences of the African Union and Mozambique.

iii. Stakeholder Discussion: A facilitated discussion was held specifically for stakeholders working in mortality surveillance. This interactive session provided a platform to gather their valuable feedback on the past and ongoing mortality surveillance initiatives in Pakistan.

iv. Framework Overview: Participants were presented with a comprehensive overview of the draft mortality surveillance framework under development, including its vision, mission, strategic objectives, overall targets, and proposed governance structure.

v. Group Work: To facilitate in-depth analysis and feedback, participants were divided into three groups. Each group engaged in thorough discussions dedicated to specific components of the draft framework.

vi. Group Discussion: A facilitated discussion took place, focusing on the group work and incorporating the participants' feedback. Participants provided positive feedback and discussed the next steps for refining the framework and developing a concrete implementation plan.

vii. Wrap-up Session: The workshop concluded on a positive note, solidifying the commitment of all participants to continued collaboration in this crucial area of public health through the development and implementation of a robust mortality surveillance system for Pakistan.

Points Discussed:
The summary of the key points discussed during the workshop's sessions on ongoing initiatives and feedback on the draft framework is as follows:

11.1: Experience Sharing by Stakeholders

Representatives from various organizations shared their ongoing initiatives related to disease and mortality surveillance:
a. NADRA: The representative of the National Database & Registration Authority (NADRA) briefed that they are implementing a project on civil registration and vital statistics, and under this project they will collect the data on births and deaths. Currently, they are carrying out scoping and advocacy meetings with different organizations like hospitals, local administrations, health departments, immunization program etc. to include them as data resource for their project.

b. Population Council: The representative of the Population Council briefed that they are integrating different health information systems into one dashboard and developing analytics based on the shared data of different health information systems. In this way data will be visualized easily. They have integrated different health information systems including district health information system (DHIS), lady health workers program, family planning data etc. for two provinces and now they are expanding their work to other provinces also.

c. MoPDSI: They are implementing a civil registration and vital statistics project, with a focus on expanding it to the local government level.

d. ICRC is collaborating with the Department of Health in Azad Jammu & Kashmir to develop a plan for managing mass casualty incidents. They have prepared an initial draft and are working on it to improve further.

e. DHO Islamabad highlighted various initiatives undertaken by his office to strengthen Islamabad's health systems.

f. WHO is working on the MPDSR project since 2016/17, collecting maternal and perinatal death data from 23 tertiary care hospitals.

g. JSI Inc.: They briefly described their work in the areas of disease surveillance, workforce development, and health surveys.

h. UK-HSA is implementing and expanding the Integrated Disease Surveillance and Response System (IDSR) across all provinces.

i. Health Research Institute (HRI): They are planning a project on a sample registration system (SRS) in collaboration with BMGF and Aga Khan University. This project is currently in the initial planning phase.

j. Other participants provided brief overviews of their work in related areas.

11.2: Feedback On the Draft Framework

a. Participants appreciated the initial draft of the mortality surveillance framework and commended the comprehensive nature of its objectives.
b. Emphasis on Comprehensiveness: Participants suggested incorporating data from various sources, including:

- Disease surveillance programs
- Primary, secondary, and tertiary healthcare facilities
- Vertical programs
- Disease-specific programs / Vertical programs
- Private healthcare facilities

c. Additional Data Sources: Participants suggested to included data from other sources like:

- Border health services.
- Ambulatory services
- Mortuaries
- Medico-legal systems

d. Standardized Data Collection: Participants advocated for a standardized tool to collect data across all reporting sites, encompassing all causes of death and relevant variables to ascertain the cause of death.

e. Capacity Building: The need for comprehensive training activities for personnel involved in data reporting and cause of death ascertainment was highlighted.

11.3: System Design and Implementation Considerations

a. Sustainable Electronic Platform: Participants proposed using a sustainable electronic platform for data collection, integration, and visualization. This platform should include a dashboard with embedded analytical capabilities.

b. Data Analysis and Public Health Intervention: Engagement of district, provincial, and federal disease surveillance and response units in data analysis and public health intervention coordination was emphasized.

c. Stakeholder Engagement: It was suggested to involve provincial healthcare commissions to enhance system acceptability and include their representatives in technical working groups.

11.4: Data Utilization and Policy Development

a. Regular and efficient data analysis with dissemination to relevant stakeholders for informed decision-making and public health interventions aimed at reducing preventable mortality was discussed.

b. Regular meetings of technical working groups were proposed to review data, make policy decisions on controlling preventable mortality causes, and engage with appropriate forums within provincial and federal health departments/ministries for policy formulation. The IHR Secretariat at NIH, Islamabad, was suggested to be used as a potential facilitator for the coordinations.

11.5: Way Forward

Based on the workshop discussions, the following steps were proposed:

i. Refining the Draft Framework: The participants suggested incorporating the workshop's discussions into an updated draft of the mortality surveillance framework.

ii. Further Input and Collaboration: The updated draft may be circulated to the participants of the workshop via email, providing an opportunity to offer further feedback, inputs and suggestions.

iii. Continued Collaboration and Engagement: Participants expressed interest in further discussions and consultations. This could involve additional meetings and opportunities for collaboration. This will allow for ongoing discussion, refinement of the framework and development of a comprehensive implementation plan. The workshop ended on a positive note, marking a significant step forward in strengthening Pakistan's approach to mortality surveillance. This workshop fostered a shared understanding of the challenges and opportunities surrounding mortality surveillance in Pakistan, paving the way for the development of a robust and sustainable framework. All participants expressed their strong commitment for continued collaboration, and this highlights their dedication to tackle this critical public health issue. This collaborative spirit will serve as a cornerstone for successful implementation of the framework and ultimately improving health outcomes for the citizens of Pakistan.

List of Participants

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1	Dr. Faizan Arshad	Provincial Surveillance Officer	PDSRU Punjab	faizan1992@gmail.com
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Pictures of the Event:

Section-B
Implementation Plan

Implementation Plan for Mortality Surveillance System in Pakistan

9. Implementation Strategy

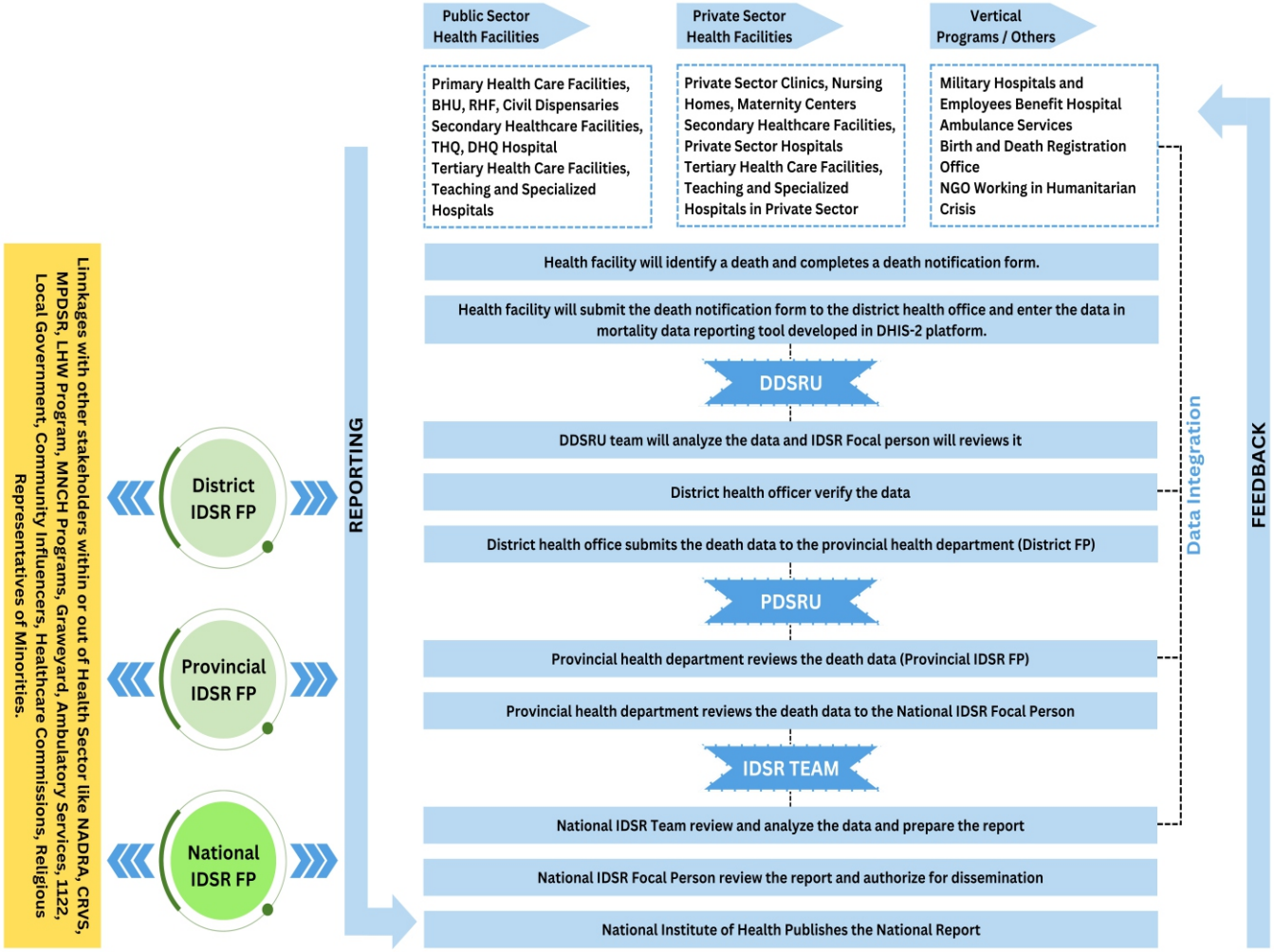
Pakistan's mortality surveillance system (MSS) will be implemented through a collaborative effort across various levels. Federal and provincial health departments, along with relevant federal and provincial government and non-government agencies including development partners/UN agencies involved in collection of mortality data will be actively engaged to strengthen the mortality surveillance. Each organization mandated for data collection will ensure its validity and authenticity. A robust monitoring system will also be implemented to ensure data timeliness, completeness, validity, accuracy, and consistency under the leadership and supervision of Ministry of National Health Services, Regulation & Coordination (MoNHSRC) and the National Institute of Health (NIH) in coordination with provincial health departments and relevant stakeholders. Data analysis will be conducted at both the provincial and federal levels for a detailed understanding of national and regional trends and l patterns. National, provincial and district health department will be responsible to respond and timely intervention in case of any emerging situation by following the bottom up approach The National Institute of Health (NIH), Islamabad will collaborate to ensure a coordinated and effective response to emerging threats. This multi-layered approach ensures data accuracy, informed analysis, timely decision, and a swift public health response or any intervention when and where needed.

10. Conceptual Workflow

The mortality surveillance system takes a multi-layered approach to ensure accurate and timely data collection. Healthcare facilities, upon identifying a death, will fill a death notification form and enter the data into a newly developed Mortality data reporting tool, developed on the DHIS-2 platform. This platform will have the features to streamline, validate and ensure consistency of data. Data review and analysis begins at the district level where the district disease surveillance and response unit (DDSRU) team under supervision and guidance of the district IDSR focal person will analyze and validate the data. District Health Office will verify the deaths in the system with a provision of 1st layer approval in DHIS-2. After the verification the data will be forwarded to the provincial health department. At provincial level, the provincial IDSR focal person will conducts a comprehensive review and analysis of data from all districts for 2nd layer approval before forwarding it to the National IDSR team. The national IDSR team will performs a comprehensive analysis and prepare a report on weekly basis. To ensure accuracy and adherence to the protocols, the designated national IDSR focal person will reviews the report before dissemination to relevant stakeholders at federal and provincial level. Finally, the National Institute of Health will publish a national mortality report based on the aggregated data in Public Health Bulletin of Pakistan. This will not only foster, the collaboration among different stakeholders at multiple tiers but will help to enhance the efficiency and effectiveness of mortality data from collection till dissemination.

It is also crucial to establish strong linkages, coordination, and collaboration with key stakeholders from health and non-health sectors involved in mortality data collection and management such as NADRA, Heath Care Commissions, Maternal and Perinatal Death Surveillance and Response (MPDSR) program, Lady Health Workers program, Ambulatory services like 1122, Local government, Community influencers, religious representatives of minorities etc. By integrating efforts across these entities, we can enhance

data accuracy, facilitate real-time reporting, and create a comprehensive framework that supports public health interventions and policy-making. This collaborative approach will also allow for sharing of best practices, alignment of strategies, and creation of a unified national database, ultimately leading to improved health outcomes and more informed decision-making at all levels of government.
The conceptual workflow is as follows:



11. Phase-wise Implementation Approach

The phase-wise approach will be adopted for the implementation of mortality surveillance system (MSS) to ensure a successful and sustainable system. Phase-1 will focus on building the foundation, establishing standardized data collection methods, and developing a Mortality data reporting tool in DHIS-2 platform. Stakeholder engagement (both within and outside the health sector), capacity building, and a central data repository will be established during this initial phase.

Phase-2 will be focusing on nationwide scaling up of Mortality data reporting tool, improving data quality, and developing the capacity to analyze data for early detection of outbreaks and prompt response. Strong communication strategies will also be developed and implemented for timely sharing and informed decision-making.

During Phase-3 long-term sustainability of the system will be ensured, which comprised of securing funds, engagement of relevant stakeholders, government ownership, system strengthening and fostering national, regional and global collaboration. After complete implementation, Mortality surveillance system will serve as a cornerstone for improving public health outcomes.
The first phase of Pakistan's MSS implementation will lay down the foundation for a comprehensive and

11.1. Phase 1: Planning, Development & Establishment (Year 1-2)

standardized system. Detailed narrative of key activities is:

1. Stakeholder Engagement and Collaboration:

- Consultations: Extensive consultations will be conducted with government agencies (Ministry of Health, provincial health departments), civil registration and vital statistics organizations, healthcare providers (hospitals, clinics), community representatives (NGOs, religious leaders), and academia. Objectives of such consultations is to get the feedback from all stakeholders, address their concerns, gathers valuable insights for existing practices and challenges and ultimately to get the concurrence of all stakeholders for the implementation of the system.
- Steering Committee Formation: A national MSS steering committee will be constituted, comprising representatives from all relevant stakeholders. This committee will guide and oversight the overall process for development, implementation, monitoring, and fostering collaboration and ownership.
- Linkages with other stakeholders: To ensure comprehensiveness, linkages, collaboration and coordination with other stakeholders working for mortality data like NADRA, CRVS, MPDSR, Lady Health Workers program, Population Council etc. will be developed to strengthen the mortality surveillance system in Pakistan.

2. Standardization and System Design:

- Standardized Tools Development: Standardized data collection tools will be developed or adapted according to contexts. These tools include:

Death data reporting form: Death data reporting tool with ICD-11(or latest) coding guidance for healthcare professionals.

Verbal autopsy: Standardized questionnaires for healthcare workers or trained community members to collect information about deaths occurring outside facilities.

- Pilot Testing: The standardized tools and data collection methods will be piloted in diverse settings, including urban hospitals, rural clinics, and remote communities. Pilot testing will helps to identify potential challenges, refinement of tools, and removal of inconsistencies, data validation, timeliness and completeness etc.

3. Mortality data reporting tool Development:

- Mortality data reporting tool Development and Integration: A Mortality data reporting tool will be developed. This system will facilitate online death registration by healthcare facilities and vital registration centers, minimizing paper-based processes and streamlining data collection.
- Integration Strategy: An integrated approach will be formulated to combine/unite the Mortality data reporting tool with existing hospital information systems (HMIS) and vital registration systems. This will ensures seamless data flow from different sources into the central data repository.

4. Central Data Repository and Data Management:

- Data Repository Establishment: A secure central data repository will be established to store and manage all mortality data collected through Mortality data reporting tool, verbal autopsies, and other sources. All necessary security measures will be adopted to ensure data security and privacy.
- Data Management Guidelines: Data management guidelines will be developed to ensure data quality, accuracy, validity, consistency, timeliness and completeness. These include protocols for data entry, cleaning, secure storage, and protection ensuring privacy and confidentiality of data with different system user access levels.
- Data Quality Control Measures: Data quality checks will be applied and other data quality control measures will also be adopted to identify and address potential errors, duplication and inconsistencies.

5. Continuous training program for Capacity Building:·

- Training Programs: Training programs will be developed and delivered for healthcare professionals on accurate/actual cause-of-death certificate using the ICD-11(or latest) coding system. This training will enhance data accuracy and standardized coding practices.
- Community engagement and Mobilization: Community-based training and sensitization campaigns will be conducted to educate the public on the importance of death registration, reporting factual information, and to gain community cooperating to strengthen the system.
- Technical Assistance: Technical assistance is provided to health officials at various levels on data management, data security, and system maintenance to ensure long-term sustainability.

6. Communication and Dissemination Strategy:

- Communication Plan: A comprehensive communication plan will be developed to understand the protocols for data dissemination. This plan will outline different communication channels to reach diverse stakeholders.
- Dissemination Tools: User-friendly tools like reports, dashboards, and online platforms will be created to share mortality data in a clear and accessible format for stakeholders. Regular data reports will be prepared, highlighting mortality trends, disease patterns, and key findings.
- Media Engagement: Media outlets will be e engaged to raise awareness about the MSS and its importance in improving public health.

7. Monitoring and Evaluation:

During Phase 1, monitoring and evaluation framework will be developed and implemented to monitor the progress and identify potential challenges. This will ensure timely adjustments and course correction for a successful MSS implementation. After completion of phase 1 and phase 2 preliminary evaluation will be carried out and final evaluation will be done after the implementation of all 3 phases.

11.2. Phase 2: Strengthening & Expansion (Year 3-4)

Phase 2 will focus on scaling up the established MSS framework and strengthening its reach across the country. Detailed narrative of key activities is:

1. System Integration & Expansion:

- Mortality data reporting tool Integration & Expansion: After piloting and completion of phase 1, Mortality data reporting tool will be rolled out nationwide. The process will be initiated to integrate existing hospital information systems and vital registration systems with DHIS-2 to ensure seamless data collection from all healthcare facilities.
- Standardized Training Dissemination: Training programs developed in Phase 1 for healthcare professionals on accurate cause-of-death certification will be disseminated across all provinces and districts. This will ensure a standardized approach to data collection and improve data quality.
- Community Engagement and Capacity Building: Community engagement activities will be expanded. Collaborations with community-based organizations will also be engaged to facilitate training on conducting verbal autopsies for deaths occurring outside healthcare facilities. Additionally, community awareness campaigns on death registration will be intensified.

2. Data Quality Improvement and Monitoring:

- Strengthening Remote Data Collection: Devised data collection Strategies will be implemented to improve data collection from remote areas and those with limited healthcare access. This may involve training community health workers on conducting verbal autopsies and exploring innovative methods like mobile phone applications for death reporting.
-

- Data Quality Monitoring Systems: Robust data quality monitoring systems will be established. These systems will identify data inconsistencies, missing information, duplication, and potential errors, allowing for timely corrections and improvements.
- Data Completeness Strategies: Data completeness Strategies will be implemented to address underreporting and improve data completeness. This may involve collaborating with local authorities to ensure death registration from remote areas and conducting follow-up investigations for incomplete death certificates.
- Innovation and Capacity building to improve Verbal Autopsy: Strategies are developed to improve the accuracy and efficiency of verbal autopsy data collection. This may include training additional community health workers and exploring the use of mobile technology for data capture.
- Feedback Mechanisms: Feedback mechanisms will be established to receive input from data providers (healthcare professionals, community members) on data collection tools, reporting processes, and challenges faced. This feedback will continuously inform improvements to the MSS.

3. Advanced Data Analysis and Utilization:

- Data Analysis Capacity Building: Advanced data analysis capacity for MSS will be developed within the system. Moreover, trainings on data visualization tools, statistical analysis techniques, and mortality trend identification will also be carried out.
- Dissemination of Insights: Data analysis findings will be translated into actionable insights and disseminated through regular reports, live dashboards, and briefings. These reports will highlight emerging trends, disease patterns, and risk factors associated with mortality for specific populations or geographic areas.
- Collaboration with Researchers: Different research and academic institutes will be engaged for collaborative research and in-depth analyses of specific diseases and priority health concerns. This collaboration will utilize the rich data set of the MSS to inform research and identify potential interventions.
- Predictive Modeling and forecasting: Exploring the use of predictive models and forecasting tools will be used. These models will help to forecast potential outbreaks and associated mortalities. The evidence will pave the way to inform public health interventions based on real-time data analysis.

4. Dissemination and Communication:

- Stakeholder-Specific Reports: Develop and disseminate targeted reports tailored to the needs of different stakeholders. This includes policymakers, healthcare professionals, researchers, and communities. Reports with clear and visually appealing data visualizations will be provided to enhance understanding and facilitate informed decision-making.
- Media Engagement: Continued collaboration with media outlets to share key findings from mortality data analysis. This will help to inform the public regarding health trends and the importance of the MSS for improving health status.

11.3. Phase 3: Sustainability & Innovation (Year 5 onwards)

1. Impact Evaluation and Improvement:

- Evaluation Framework Development: A robust framework is developed to evaluate the impact of public health interventions based on mortality data analysis. This allows for the measurement of interventions' effectiveness in reducing mortality from specific diseases.
- Pre- and Post-Intervention Evaluations: Pre- and post-intervention evaluations will be conducted to assess the effectiveness of new public health programs in reducing mortality rates. This data will be used to refine or readjust existing interventions and develop new strategies based on evidence.
- Data-Driven Decision Making: By utilizing data on the impact of interventions, policymakers will make data-driven decisions for optimal health outcomes.

2. Enhanced Preparedness and Response:

- Strengthening Surveillance & Response Teams: Ongoing training and simulation exercises will be conducted for rapid response teams. This will contribute to strengthen the preparedness for timely investigation and containment of potential outbreaks based on early warning system/alerts.
- Resource Mobilization Plans: development of resource identification and mobilization plan for efficient allocation and disbursement of all resources including financial, HR, supplies, infrastructure and equipment etc.

3. Collaboration and Knowledge Sharing:

- International Partnerships: Strengthen collaboration with international organizations and partners working on mortality surveillance systems. This collaboration will open the avenues for knowledge exchange, sharing best practices, potential challenges, strategies to overcome the challenges and joint research projects.
- South-South Collaboration: Foster collaboration and knowledge sharing with other developing countries facing similar health challenges. Sharing successful strategies and lessons learned can benefit public health efforts globally.

4. Innovation and Emerging Technologies:

- Technological Exploration: Explore and integrate emerging technologies into the MSS, such as using mobile technology/ phone apps for death reporting, utilizing big data analytics, artificial intelligence, and machine learning for more sophisticated data analysis and trend identification.
- Data Security and Privacy: Implement appropriate and updated data security measures and protocols to ensure the privacy and confidentiality of data.
- Adapting to New Threats: Continuously monitor global health trends and adapt the MSS to effectively identify and track emerging health threats and pandemics.

12. Plan of Activities for Strategic Objectives

Sr. #	Description of Activities	Responsible Organization	Phase-1		Phase-2		Phase-3
			Year-1	Year-2	Year-3	Year-4	Year-5
Objective-1: Establishment of a Standardized and Integrated System							
1.	Advocacy meeting with different national level stakeholders like NADRA, CRVS, MPDSR etc. for implementation of the mortality surveillance system (MSS) and development of TORs for national level steering committee and technical working group. MOUs will be promulgated accordingly.	MoNHSRC / NIH	X	X			
2.	Advocacy meeting for different provincial level stakeholders for implementation of the mortality surveillance system (MSS) and development of TORs for provincial level steering committee and technical working group (one meeting for each province)	NIH / Provincial Health Departments	X	X			
3.	Notification of national and provincial steering committees and technical working groups	Federal / Provincial / Regional Health Departments	X	X			
4.	Consultative meeting for development of protocols and a standardized tool for death data collection and reporting	MoNHSRC / NIH / Provincial / Regional Health Departments	X				

Sr. #	Description of Activities	Responsible Organization	Phase-1		Phase-2		Phase-3
			Year-1	Year-2	Year-3	Year-4	Year-5
5.	Development of a digital platform (Mortality data reporting tool (MDT) in DHIS-2 for death data collection and reporting	NIH	X				
6.	Consultative meeting with relevant stakeholders for integration of different death data collection and reporting mechanisms like CRVS, MPDSR, LHW program, VPD surveillance data etc. with Mortality data reporting tool	MoNHSRC / NIH / Provincial / Regional Health Departments	X	X			
7.	Integration of different death data collection and reporting systems like HMIS, LHW reporting system, VPD surveillance system etc. with Mortality data reporting tool	NIH		X	X	X	X
8.	Development of a standardized curriculum for training on death data collection and reporting including reporting cause of death	NIH / Provincial / Regional Health Departments	X	X			
9.	Training of medical professionals, allied health professionals, lady health workers, community health workers, and data reporting staff (all levels) and staff of HCCs and other relevant departments on death data collection and reporting tools	NIH / Provincial / Regional Health Departments	X	X	X	X	X

Sr. #	Description of Activities	Responsible Organization	Phase-1		Phase-2		Phase-3
			Year-1	Year-2	Year-3	Year-4	Year-5
10.	Training of relevant health workforce at various levels on data management, sharing security, analysis and dissemination of mortality data	NIH / Provincial / Regional Health Departments	X	X	X	X	X
11.	Development of supportive supervision plan to assess the implementation progress and identification of potential challenges	NIH / Provincial / Regional Health Departments		X	X	X	X
Objective-2: Enhanced Data Collection and Reporting							
1.	Consultative meeting for development of verbal autopsies tool to be used for community death data collection and reporting.	MoNHSRC / NIH / Provincial /Regional Health Department	X	X			
2.	Consultative meetings with tertiary care hospitals, healthcare commissions and health regulatory authorities for strengthening and enhancement of death data collection	NIH / Provincial / Regional Health Departments		X	X		
3.	Development of training curriculum for lady/community health workers and other relevant HCWs (Facility In charge) on conducting verbal autopsies for deaths outside healthcare facilities.	NIH / Provincial / Regional Health Departments	X	X			

Sr. #	Description of Activities	Responsible Organization	Phase-1		Phase-2		Phase-3
			Year-1	Year-2	Year-3	Year-4	Year-5
4.	Training of lady/community health workers for conducting verbal autopsies for deaths outside healthcare facilities and reporting data on a standardized tool.	NIH / Provincial / Regional Health Departments		X	X	X	X
5.	Advocacy meetings with community-based organizations / community based social organizers / health management committees to support implementation of MSS	NIH / Provincial / Regional Health Departments		X	X	X	X
6.	Customization of DHIS-2 mobile app based on Mortality data reporting tool and verbal autopsy tool for death data collection and reporting	NIH	X				
7.	Training of medical & allied health professionals, lady health workers, community health workers, and data reporting staff on mortality data reporting tool and verbal autopsy tool in DHIS-2 mobile app.	NIH / Provincial / Regional Health Departments		X	X	X	X
8.	Conduction of regular data audits / quality assessments and implementation of corrective measures to address data discrepancies	NIH / Provincial / Regional Health Departments/HCCs	X	X	X	X	X

Sr. #	Description of Activities	Responsible Organization	Phase-1		Phase-2		Phase-3
			Year-1	Year-2	Year-3	Year-4	Year-5
9.	Quarterly review meeting with national and provincial technical working groups, surveillance officers and focal persons for discussion on data audits / quality assessments and data discrepancies	NIH / Provincial / Regional Health Departments		X	X	X	X
Objective-3: Improved data analysis and utilization							
1.	Training of healthcare professionals and data reporting professionals at all levels on data analytics, usage of Mortality data reporting tool dashboard, and making reports	NIH / Provincial / Regional Health Departments		X	X	X	X
2.	Training of healthcare professionals on scientific and PHB report writing using MSS data	NIH / Provincial / Regional Health Departments		X	X	X	X
3.	Consultative meeting for development of guidelines for data security and sharing mechanism	MoNHSRC/ NIH/ Provincial/ Regional Health Departments					
4.	Stake holder analysis and Development of policies / plans for dissemination and utilization of MSS reports to all levels	MoNHSRC / NIH / Provincial / Regional Health Departments			X	X	X
5.	Fortnightly meetings of data reporting HR / stakeholders to review MSS data and reports	NIH / Provincial / Regional Health Departments	X	X	X	X	X
6.	Conduction of end year in-depth reviews of leading causes of death to identify contributing factors, high-	NIH / Provincial / Regional Health Departments			X	X	X

Sr. #	Description of Activities	Responsible Organization	Phase-1		Phase-2		Phase-3
			Year-1	Year-2	Year-3	Year-4	Year-5
	risk groups, spatial patterns of mortality for specific diseases, and potential environmental or social determinants etc.						
7.	Development of risk factor profiles for specific diseases (communicable and non-communicable) and populations based on MSS data	NIH / Provincial / Regional Health Departments			X	X	X
8.	Development of modules, resource materials for table top and simulation exercises based on MSS data	NIH / Provincial / Regional Health Departments			X	X	
9.	Use of machine learning software / Artificial intelligence platforms for data modelling to predict outbreaks and capacity building of technical persons working at the district and provincial level in use of advanced technology for data modeling to predict future trends, disease severity and future outbreaks	NIH/Provinces				X	X
Objective-4: Evaluate Intervention Impact							
1.	Consultative meetings with development partners monitoring and evaluation (M&E) indicators development			X			
2.	Development of monitoring and evaluation (M&E) plan based on	NIH / Provincial / Regional Health Departments		X	X	X	X

Sr. #	Description of Activities	Responsible Organization	Phase-1		Phase-2		Phase-3
			Year-1	Year-2	Year-3	Year-4	Year-5
	developed M&E indicators for MSS						
3.	Conduction of routine monitoring activities as per M&E plan	NIH / Provincial / Regional Health Departments/HCCs		X	X	X	X
4.	Conduction of pre-assessment and post-intervention evaluations to assess effectiveness in reducing mortality from specific diseases	NIH / Provincial / Regional Health Departments / other relevant stakeholders like HCC, NGOs and developmental partners			X	X	X
5.	Conduction of cost-effectiveness analyses for the evaluated interventions, and comparison of the costs of interventions with their associated health benefits in terms of mortality reduction and improved quality of life	NIH / Provincial / Regional Health Departments / other relevant stakeholders				X	X
6.	Consultative meetings for dissemination of pre-assessment and post-intervention evaluations findings and cost-effectiveness analyses to the relevant stakeholders for making improvements	NIH / Provincial / Regional Health Departments/HCC			X	X	X
7.	Bi-annual meetings to discuss M&E reports, and development of recommendations for further improvement	MoNHSRC / NIH / Provincial / Regional Health Departments			X	X	X

Objective-5: Enhance Preparedness & Response							
Sr. #	Description of Activities	Responsible Organization	Phase-1		Phase-2		Phase-3
			Year-1	Year-2	Year-3	Year-4	Year-5
1.	Mapping of resource mobilization	NIH/ Provincial/ Regional Health department			X	X	X
2.	Development of resource mobilization plans to ensure efficient allocation of resources during emergencies	NIH / Provincial / Regional Health Departments			X	X	X
3.	Development of risk communication , risk mitigation and community engagement (RCCE) strategy and plans	NIH / Provincial / Regional Health Departments		X	X	X	X
4.	Conduction of risk communication, risk mitigation and community engagement activities as per RCCE plan	NIH / Provincial / Regional Health Departments		X	X	X	X
5.	Consultative meeting for development of early warning system based on MSS data to detect unusual increase in mortality and its link with potential outbreaks	NIH / Provincial / Regional Health Departments	X				
6.	Development of mechanism and clear protocols for issuing of alerts and communicating risks to relevant authorities and communities.	NIH / Provincial / Regional Health Departments	X	X			
7.	Nomination of RRTs at district level	NIH / Provincial / Regional Health Departments	X				
8.	Development of procedures for rapid	NIH / Provincial / Regional Health Departments	X	X			

Sr. #	Description of Activities	Responsible Organization	Phase-1		Phase-2		Phase-3
			Year-1	Year-2	Year-3	Year-4	Year-5
	mobilization of RRTs for timely deployment						
9.	Implementation of After-Action reviews to identify gaps and challenges with good practices while responding to different public health events	NIH / Provincial / Regional Health Departments		X	X	X	X
10.	Introduction of Simulation Exercises to ensure preparedness, readiness and response elements	NIH / Provincial / Regional Health Departments		X	X	X	X
Objective-6: Strengthen Collaboration & Coordination							
1.	Development and execution of formal agreements/ MOUs/ Legal frameworks for data sharing and collaboration among different sectors like livestock, environment, academia etc.	NIH / Provincial / Regional Health Departments		X	X	X	X
2.	Conduction of multi-sectoral knowledge exchange workshops	NIH / Provincial / Regional Health Departments / other relevant stakeholders			X	X	X
3.	Development of sustainable and progressive collaboration among operational organizations, academia, and subject matter experts	NIH / Provincial / Regional Health Departments / academia / other relevant stakeholders			X	X	X
4.	Conduction of joint evaluations and comprehensive assessment of the impact	MoNHSRC / NIH / Provincial / Regional Health Departments				X	X

Sr. #	Description of Activities	Responsible Organization	Phase-1		Phase-2		Phase-3
			Year-1	Year-2	Year-3	Year-4	Year-5
	of the collaboration on health outcomes						
Objective-7: Support Research & Policy Development							
1.	Conduction of operational research in the areas of concern to support evidence-based decision making and policy development	NIH / Provincial / Regional Health Departments / academia/ beauro of Statistics			**X**	**X**	**X**
2.	Conduction of workshops to translate research findings into actionable recommendations for policymakers	NIH / Provincial / Regional Health Departments				**X**	**X**
3.	Explore and integrate emerging technologies into the MSS, such as utilizing big data analytics, artificial intelligence, and machine learning for more sophisticated data analysis and trend identification	NIH/ planning & development/ education department				**X**	**X**
4.	Conduction of consultative meetings to develop plan and policies for long term sustainability of MSS	MoNHSRC / NIH / Provincial / Regional Health Departments			**X**	**X**	**X**

13. Brief Report on Workshop of Implementation Plan Review meeting

A three-day consultative workshop was organized by National Institute of Health, Islamabad from 18th – 20th November 2024 to engage with diverse stakeholders from provincial health departments, provincial health care commissions and development partners working in disease and mortality surveillance. The goal was to discuss and review the mortality surveillance system implementation plan and gather their valuable feedback and suggestions for its improvement and finalization.

Proceedings of the Workshop:

The National Mortality Surveillance System-Implementation Plan workshop formally commenced with an introduction of the participants. A diverse range of stakeholders representing organizations like the Provincial Departments of Health, Provincial Health Care Commissions, World Health Organization (WHO), Population Council, UK-HSA, JSI Inc./USAID, JHPIEGO, International Committee of the Red Cross (ICRC), etc. actively participated in the workshop.

The workshop unfolded as follows:

I. Opening Session: The workshop opened with a brief about workshop's purpose and objectives and a detailed analysis of Pakistan's current fragmented mortality surveillance system. This set the stage for informed discussions and a shared understanding of the current landscape among workshop participants.

ii. Introductory Session: The UKHSA Country Lead highlighted the critical need for a robust mortality surveillance system. They emphasized how accurate and timely mortality data can add value to improve public health outcomes and be used in evidence-based policies, guide resource allocation, epidemiological research and help us effectively respond to disease outbreaks in future.

iii. Integration of mortality surveillance with IDSR: This session provided insights into the integration of mortality surveillance with the Integrated Disease Surveillance and Response (IDSR) system. This integration offers several key advantages, such as enhanced data collection by utilizing the existing IDSR framework and leveraging existing reporting mechanisms and personnel while avoiding duplication of efforts and streamlining data collection and analysis.

iv. Implementation Plan Overview: A comprehensive overview of the draft of Mortality Surveillance Implementation Plan was presented to the participants. This included its vision, mission, strategic objectives, overall targets, and activities to be carried out in future.

v. Group Work: For in-depth review and feedback on the implementation plan, participants were divided into three groups. Over the following days, each group engaged in thorough discussions while reviewing all seven strategic objectives of the plan.

vi. Group Discussion: A facilitated discussion was conducted focusing on the group work and incorporating participants' feedback. Participants provided constructive feedback and offered expert opinions on refining the targets and strategic objectives, ultimately contributing to the development of a more concrete implementation plan.

vii. Wrap-up Session: The workshop concluded on a positive note, with all groups presenting their group work and engaging in a mutual consensus-building process to incorporate the proposed suggestion / amendments into the plan. This session solidified the commitment of all participants to continued collaboration in this crucial area of public health through the development and implementation of a robust mortality surveillance system for Pakistan.

Feedback on Implementation Plan:

A three-day consultative workshop was organized by National Institute of Health, Islamabad from 18th – 20th November 2024 to engage with diverse stakeholders from provincial health departments, provincial health care commissions and development partners working in disease and mortality surveillance. The goal was to discuss and review the mortality surveillance system implementation plan and gather their valuable feedback and suggestions for its improvement and finalization.

Key Recommendations and Insights:

1. **Integration of Diversified Data Sources:** A central theme of the workshop was the need to integrate diversified mortality data sources. Participants emphasized that relying on a single source of data could limit the representativeness and comprehensiveness of the surveillance system. The following additional data sources were recommended for integration:
    - Disease Surveillance Programs: These programs provide valuable insights into specific causes of mortality, particularly those linked to infectious diseases.
    - Healthcare Facilities: Mortality data from public sector primary, secondary, and tertiary healthcare facilities should be integrated into the system to capture deaths occurring in hospitals and clinics.
    - Vertical Health Programs: Disease-specific programs such as those for HIV/AIDS, tuberculosis (TB), and other communicable diseases often capture crucial information on causes of death, especially those that are preventable.
    - Private Healthcare Providers: The private healthcare sector plays a significant role in Pakistan's health system. Including data from private clinics and hospitals is crucial to ensure comprehensive mortality tracking.
    - Community organizations/Program: The data from organizations working at community level like lady health worker program, community health worker program, community midwives etc. may also be integrated with the other data sources.
    - Ambulatory Services: Data from emergency response services such as 1122, Edhi, and Chipa can provide valuable information on pre-hospital deaths, which are often not captured in traditional health settings.
    - Mortuaries, Graveyards, & Shamshan Ghat: Records from mortuaries, graveyard and shamshan ghat data can serve as important sources of information on deaths, particularly in areas with limited access to healthcare facilities.
    - Medico-Legal Systems: The medico-legal sector plays a critical role in recording deaths resulting from violence, accidents, and other external causes.
2. **Standardized Data Collection Tool:** A major focus of the workshop was the need to standardize the data collection across all reporting entities. The lack of uniformity in data collection methods could lead to inconsistencies and inaccuracies in the mortality data. It was recommended that a standardized data collection tool be developed and implemented across all health and non-health reporting sites. This tool should cover all potential causes of death, including communicable and non-communicable diseases, as well as external causes like accidents and violence. In addition to cause-of-death data, the tool should collect information on relevant socio-economic and demographic factors, which will help identify risk factors and trends related to mortality.
3. **Sustainable Electronic Platform for Data Management:** Participants recommended utilizing DHIS-2 a widely used, scalable, and sustainable system that supports web-based and app-based data collection. This platform allows for easy integration with other public health data systems, enabling a comprehensive view of mortality trends. A user-friendly dashboard should be designed within the platform to display key mortality indicators and trends. This dashboard should include embedded analytical tools to facilitate real-time data interpretation and decision-making at the district, provincial, and national levels.

4. **Data Analysis and Public Health Action:** One of the primary goals of the mortality surveillance system is to take informed decisions and public health actions. Participants stressed the importance of ensuring that data analysis is not just a technical exercise, but that it directly informs public health interventions aimed at reducing preventable mortality. Collaboration between District, Provincial, and Federal levels of government, as well as disease surveillance and response units, is essential for coordinating this effort. The use of mortality data to guide public health policies and actions should be prioritized, particularly in areas where mortality rates are high due to preventable causes.
5. **Stakeholder Engagement and Collaboration:** Successful implementation of the mortality surveillance system will require active involvement from a wide range of stakeholders. It was emphasized that Provincial health departments and Healthcare commissions should be engaged in the implementation process. These bodies will play an important role in regulating data collection, particularly from the private healthcare sector, and ensuring adherence to standardized protocols. Furthermore, healthcare commissions should serve as key facilitators in advocating for the integration of mortality surveillance into private healthcare facilities.
6. **Data Utilization for Policy Development and Research:** The workshop highlighted the importance of using the collected data not only for immediate public health action but also for long-term policy development and research. It was recommended that data analysis be conducted regularly, and findings be shared with policymakers to inform the development of strategies to prevent premature deaths. The academia can also be engaged for conducting operational research which will contribute to reduce the burden of disease and deaths. Establishing regular technical working group meetings was also proposed as a means to review mortality data, assess trends, and develop policies aimed at controlling preventable mortality. Additionally, the IHR Secretariat at National Institute of Health (NIH) in Islamabad could be leveraged as a potential facilitator for coordination among various stakeholders.

Way Forward:

1. **Finalization of the Implementation Plan:** In light of the feedback received during the workshop, the implementation plan may be revised to incorporate the recommendations and insights shared by the participants. This updated plan will serve as the foundation for the activity plan of the mortality surveillance system.
2. **Development of standardized mortality data reporting tool:** To standardize the data collection across all reporting entities, a standardized tool should be developed and implemented across all health and non-health reporting sites. This tool will cover all potential causes of death, including communicable and non-communicable diseases, as well as external causes like accidents and violence.
3. **Provincial Advocacy & Consultation:** To ensure the successful implementation of the plan, it is crucial that the advocacy and consultation meeting may be held at provincial level to ensure the engagement of provincial stakeholder and ownership.
4. **Implementation of Planned Activities:** The activities as planned and outlined in the implementation plan will be carried in collaboration with provincial health departments and stakeholders at provincial level. This include deployment of data tool, training of trainers, training of data reporting staff, provision of digital platform for data reporting and provision of necessary supplies etc.
5. **Capacity Building and Training:** Successful data collection and analysis require well-trained personnel. In this regard, training and capacity building of the staff involved in the collection and reporting of mortality data will be carried out. A comprehensive training program will be implemented to ensure that all relevant personnel will be trained on the use of standardized data collection tool and reporting cause-of-death effectively.

The workshop ended on a positive note and provided a valuable platform for discussing the future of mortality surveillance in Pakistan. Participants demonstrated a strong commitment to addressing the challenges associated with mortality data collection and analysis. Through collaboration, knowledge-sharing, and continuous engagement, the stakeholders reaffirmed their dedication to improving public health in Pakistan and reducing preventable deaths.

List of Participants

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Pictures of the Event:

Mortality Surveillance Framework & Implementation Plan, Pakistan 2025-2029