

Joint external evaluation of IHR core capacities of

Nepal

Mission report:

28 November – 2 December 2022



World Health
Organization

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Abbreviations

AAR	after action review
AERSSC	Accreditation Education Research & Scientific Service Centre
AFP	acute flaccid paralysis
AGE	acute gastroenteritis
AHW	auxiliary health worker
AIIR	airborne infection isolation room
AITC	Agriculture Information and Training Centre
AMC	antimicrobial consumption
AMIS	Aid Management Information System
AMR	antimicrobial resistance
AMRMSC	high-level steering committee – AMR
AMU	antimicrobial use
ANM	auxiliary nurse midwives
API	application programming interface
ARI	acute respiratory infection
AST	antimicrobial susceptibility testing
AWD	acute watery diarrhoea
B-GAN	Broadband Global Area Network
BCG	Bacille Calmette-Guérin tuberculosis vaccine
BeSD	Behavioural and social drivers of vaccination
BHS	basic health services
BIPAD	Building Information Platform Against Disasters
BMIS	Budget Management Information system
BSC	biosafety cabinet
BWC	Biological Weapons Convention
CAAN	Civil Aviation Authority of Nepal
CBRN	chemical, biological, radiological and/or nuclear
CCMC	Crisis Management Coordination Centre
CCS-AMR	WHO country cooperation strategy on AMR programme
CCS-PHE	WHO country cooperation strategy for public health emergencies
CD	chief district officer
CICT	case investigation and contact tracing
CPE	continuous professional education
CPRP	RCCE in COVID-19 Nepal: Preparedness and Response Plan
CRS	congenital rubella syndrome
CSD	Curative Service Division
CSF	cerebrospinal fluid
CVL	Central Veterinary Laboratory
DDA	Department of Drug Administration
DDMC	District Disaster Management Committee
DEOC	District emergency operation centre
DFTQC	Department of Food Technology and Quality Control

DHM	Department of Hydrology and Meteorology
DLS	Department of Livestock Services
DOHS	Department of Health Services
DPT	diphtheria-tetanus-pertussis vaccine
DRR	disaster risk reduction
DWSSM	Department of Water Supply and Sewerage Management
EAFI	adverse events following immunization
EBRD	European Bank for Reconstruction and Development
EC	European Commission
ECDC	European Centre for Disease Prevention and Control
EDCD	Epidemiology and Disease Control Division
EDP	external development partners
EHS	essential health services
EIA	enzyme immunoassay
EID	emerging infectious diseases
EIOS	Epidemic Intelligence from Open Sources
eLMIS	Electronic Logistics Management Information System
EMDT	emergency medical deployment team
EMLW	emergency medical logistics warehouses
EMS	emergency medical services
EMT	emergency medical teams
EOC	emergency operations centre
EPI	WHO Expanded Programme on Immunization
EPPR	Epidemic and Pandemic Preparedness and Response Programme
EQA	external quality assurance
EQAP	external quality assurance programme
ESBL	extended spectrum beta lactamase
EUFMD	European Commission for the Control of Foot-and-Mouth Disease
EVSM	Effective Vaccine Store Management
EWARS	Early Warning and Reporting System
FA	Food and Agricultural Organization of the United Nations
FCGO	Financial Comptroller General Office
FCHV	Female Community Health Volunteer
FELTP	field epidemiology and laboratory training programme
FETP	field epidemiology training programme
FETP-V	FETP for veterinarians
FIEQC	food import and export quality certification office
fIPV	fractional inactivated polio vaccine
FL	frontline officer
FMD and TADs	Foot & Mouth Disease and TADs Lab, a specialized laboratory for transboundary animal diseases
FTQCD	Food Technology and Quality Control Divisional Offices
FTQC	Food Technology and Quality Control Office
GAP	Good Agricultural Practices
GAVI	Global alliance on vaccines and immunization

GBV	Gender Based violence
GDP	gross domestic product
GESI	gender equity and social inclusion
GISRS	Global Influenza Surveillance and Response System
GLASS	Global Antimicrobial Resistance Surveillance System
GVAP	WHO Global Vaccine Action Plan
HAI	hospital acquired infection
HCAI	health care associated infections
HCD	Health Coordination Division, MOHP
HDPRP	hospital disaster preparedness and response plan
HEDMU	Health Emergency and Disaster Management Unit
HEOC	health emergency operations centre
HPAI	highly pathogenic avian influenza
HPV	human papillomavirus
HSA	humanitarian staging area
IAEA	International Atomic Energy Agency
IAM	Integrated AMR Management
IAR	intra action review
ICAO	International Civil Aviation Organization
ICS	Incident Command System
IFMIS	Integrated Financial Management Information System
IHMIS	Integrated Health Information Management Section
IHR	International Health Regulations
IHR NFP	national IHR focal point
IMS	Incident Management System
INFOSAN	International Food Safety Authorities Network
IPC	infection prevention and control
IPCS	International Program on Chemical Safety
IVD	in vitro diagnostics
JRA	joint risk assessment
LDMC	Local Disaster Management Committee
LIMS	Laboratory Information Management System
LMBIS	Line Ministry Budget Information System
MALDI-TOF MS	matrix assisted laser desorption ionization – time of flight mass spectrometry
MD	management division
MDR	multidrug resistant
MDR	multi drug resistant organism
MMR	measles, mumps and rubella
MNT	measles and neonatal tetanus
MOALD	Ministry of Agriculture and Livestock development
MOF	Ministry of Finance
MOFA	Ministry of Foreign Affairs
MOFAGA	Ministry of Federal Affairs and General Administration
MOHA	Ministry of Home Affairs
MOHP	Ministry of Health and Population

MOU	Memorandum of understanding
MPDSR	Maternal and Perinatal Death Surveillance and Response
MR	Measles-Rubella
MRSA	methicillin-resistant staphylococcus aureus
MSS	Minimum Service Standards checklist/tool
NAMS	National Academy of Medical Sciences
NAPA	National Adaption Programme of Action
NAPHS	National action plan for health security
NARC	Nepal Agricultural Research Council
NCC	National coordinating centre
NDPIC	Nepal Drug and Poison Information Centre
NDRRMA	National Disaster Risk Reduction and Management Authority
NEOC	National emergency operations centre
NEQAS	National external quality assurance programme
NEVLA	Nepal Veterinary and Livestock Association
NFFRL	National food and feed reference laboratory
NHEICC	National Health Education, Information and Communication Centre
NHPC	Nepal Health Professional Council
NHRC	Nepal Health Research Council
NHSS	MOHP National Health Security Strategy
NHTC	National Health Training Centre
NIP	National Immunization Programme
NISN	National Influenza Surveillance Network
NMC	Nepal Medical Council
NNC	Nepal Nursing Council
NNRFC	National Natural Resources and Fiscal Commission
NPC	National Planning Commission
NPHL	National Public Health Laboratory
NRL	National Reference Laboratory
NSSD	Nursing and Social Security Department
NTV	national television
NTWC	National Technical Working Committee
NVA	The Nepal Veterinary Association
NVPS	National Veterinary Pharmacovigilance System
NWC	National Women Commission
OCMC	One-stop Crisis Management Centre
OOPE	out-of-pocket expenditure
OPD	outpatient department
OPV	oral poliovirus vaccine
OSCE	Organization for Security and Cooperation
OTC	over-the-counter
PAMS	Public Asset Management System
PCR	polymerase chain reaction
PCV	pneumococcal conjugate vaccine
PDMC	Provincial Disaster Management Committee

PEP	post-exposure prophylaxis
PFMSF	public financial management strategic framework
PHEIC	public health emergency of international concern
PHEM	public health emergency management
PHEOC	public health emergency operations centre
PHLMC	Province Health Logistic Management Centre
PHSM	Public Health and Social Measures
PLMBIS	Province Line Ministry Budget Information System
POE	point of entry
PPE	personal protective equipment
PPHL	provincial public health laboratory
PPMD	Policy, Planning and Monitoring Division, MOHP
PVS	WOAH Performance of Veterinary Services evaluation
QSRD	Quality, Standards and Regulatory Division
RASFF	Rapid Alert System for Food and Feed
RCCE	risk communication and community engagement
RPHLN	Regional Public Health Laboratory Network
RRL	regional reference laboratory
RRT	rapid response team
RT-PCR	real time polymerase chain reaction
SARI	severe acute respiratory illness
SCP	sanitary control point
SOP(s)	standard operating procedure(s)
SPAR	State party annual self-assessment reporting tool
SPS	sanitary and phytosanitary
SSU	social service unit
STP	standard treatment protocol
TABUCS	Transaction Accounting and Budget Control System
TCV	typhoid conjugate vaccine
TIA	Tribhuvan International Airport
TTI	transfusion-transmitted infection
TWG	technical working group
UHC	universal health coverage
UHPR	Universal Health and Preparedness Review
UNDP	United Nations Development Programme
UNICEF	United Nations Children's Fund
US CDC	United States Centers for Disease Control and Prevention
VDC	village development committee
VLMS	Electronic Vaccine Logistics Management System
VSDRL	Veterinary Standards and Drug Regulatory Laboratory
WAHIS	World Animal Health Information System
WASH	water, sanitation and hygiene
WOAH	World Organisation for Animal Health
ZIDAR	Zoonotic Influenza Distribution and Ranking systems

Executive summary

The Joint external evaluation (JEE) team would like to express its appreciation to Nepal for volunteering for a JEE, and for being only the second country in the world to complete a JEE using the third edition of the JEE tool (and the 118th overall). This revised third edition of the tool incorporates lessons of the ongoing COVID-19 pandemic and other public health emergencies.

Nepal's broad and consistent efforts to prepare for emergencies and respond to them as effectively as possible clearly facilitated its whole-of-government response to the ongoing COVID-19 pandemic. The unprecedented nature, magnitude and wide societal impact of the pandemic have led to a great deal of improvisation and innovation across the country. As a result, emergency risk management stakeholders in Nepal have been understandably keen to combine the many lessons of the pandemic response – consolidated through intra action reviews – with work to address gaps in IHR core capacities identified through the JEE.

Nepal intended to undergo the JEE several years ago, but constraints posed by the recovery from the Nepal Earthquake in 2015, the transition to a federated state and then the COVID-19 pandemic meant that this intent could only be realised in late 2022. The JEE team sincerely appreciates Nepal's willingness to volunteer for a JEE, the efforts of the country to meet the requirements of the process, and the warm hospitality offered to the team. All countries that make the effort to undergo the JEE process should be commended for doing so, and for the transparency they have shown in service of strengthening global health security.

Findings from the joint external evaluation

During the JEE mission, which took place in Kathmandu from 28 November to 2 December 2022, Nepal's capacities in 19 technical areas were evaluated through a peer-to-peer, consultative process that brought a multisectoral group of national experts together with the multinational, multidisciplinary expert JEE team for a week of discussion, interaction and selected site visits. After a week of collaborative talks this process led to consensus on scores and priority actions across the 19 technical areas. These are presented with the aim of improving implementation of the IHR (2005) and enhancing health security and the resilience of the Nepali health system in emergencies.

While those technical areas are addressed in the respective sections of this report, the evaluation also generated six wider, overarching recommendations that need to be addressed to consolidate the gains achieved so far and remove bottlenecks that might impede the implementation of the agreed priority actions. These overarching recommendations, outlined below, address cross-cutting challenges affecting Nepal's capacities in many of the different technical areas.

These recommendations are underpinned by five broader policy principles.

The first is a need for strong governance mechanisms, facilitated at the highest levels of leadership, that ensure consistent, institutionalized intra- and multisectoral and One Health coordination and collaboration (i.e. the horizontal harmonization of actions) that is less dependent on individuals.

The second is the need to elaborate and endorse the legal and regulatory mechanisms, plans, SOPs, budgets etc. that are needed to improve coordination and clarify roles across the three tiers of government in Nepal's federalized structure of governance and administration (i.e. the vertical integration of actions).

Supporting both of these is the third principle: the need to facilitate strategies and processes that reduce the barriers and time taken to move from assessment to drafting to endorsement to implementation of these plans, budgets and SOPs.

The fourth principle is the development and strengthening of an integrated, interoperable information management framework and architecture, supported by a strategy for optimal use of the right information and communication tools, that breaks down data and information silos and enables efficient sharing and analysis of data. This data can then be used to generate evidence that supports decision-making and action for health emergency risk management.

Finally, bringing these benefits to where they are most needed and supporting the Nepali Constitution's goal of universal access to health care, the fifth principle is to bridge gaps between authorities/service providers and communities. This can be done by planning and implementing actions that truly involve the whole of society and strengthening community protection mechanisms – including through risk communication and community engagement that meets the needs and ensures the rights of the most vulnerable.

Overarching recommendations of the JEE

- 1. Develop a five-year, risk-based, prioritized and costed National Health Security or IHR plan, based on the recommendations of the JEE report, with roles and responsibilities for all relevant stakeholders. Implement the plan with a monitoring and evaluation framework, and facilitate implementation of all other plans and/or strategies in the pipeline in Nepal that will augment IHR capacities (e.g. the National Action Plan on AMR (NAP-AMR) and the One Health Action Plan). Institutionalize these plans with endorsed policies, guidelines, standard operating procedures and operational budgets aligned to government processes.**

A National Health Security Plan that emphasizes sustained, institutionalized funding aligned with national fiscal and budget processes, embodies intersectoral/One Health coordination, and explicitly addresses staff incentives and retention will strengthen the health sector's efforts to build and maintain core capacities under the IHR (2005).

The National Health Security plan is not standalone, and other sector-specific plans will be critical to its success: for example, the One Health Action Plan provides a framework for multisectoral information-sharing and coordinated cross-sectoral responses to outbreaks of endemic, emerging or re-emerging zoonotic diseases.

In addition to those arising from the JEE, Nepal has other robust recommendations for disaster and public health emergency preparedness, readiness, response and recovery generated by multisectoral, multistakeholder assessments, consultations and conferences that took place between the 2015 Nepal Earthquake and 2022, when several such initiatives were completed as part of the review of the national response to the COVID-19 pandemic. Implementation of some of these recommendations has strengthened national health security to its current status. It is now important to map comprehensively those recommendations that have not yet been implemented, align them to the priority actions identified by the JEE, and ensure that they are incorporated holistically into the National Health Security Plan.

2. Develop a national multihazard health emergency preparedness and response plan informed by strategic assessment of risks, with multisectoral engagement, accountability and funding, clearly aligned to the national disaster risk management architecture, strategy and plan. Ensure the rapid endorsement and implementation of this plan to enable national response readiness. Support provincial and local governments to develop similar plans contextualized to their risk profiles, but clearly aligned to the national plan to ensure vertical integration of preparedness and response actions.

Nepal has developed and uses several hazard-specific preparedness and response plans (including for earthquakes, monsoon floods, landslides and various infectious hazards). While some of these plans are multisectoral, assigning roles and responsibilities across all relevant sectors including health, many are sector-specific and lack clear articulation of the intersectoral and intergovern

mental coordination mechanisms needed for whole-of-government action. The development and implementation of multihazard health emergency preparedness and response plans at all tiers of government and administrative levels – whether federal, in provinces, in districts and/or in municipalities – would lead to more harmonized, accountable action by all relevant stakeholders. These plans require a multisectoral/One Health approach that considers and aligns the existing hazard- and sector-specific preparedness and response plans that have served the country so well.

3. Develop an accountability framework and SOPs for intra- and intersectoral coordination and communication among and between the health and non-health sectors, including the security apparatus, the private sector and civil society, across all levels of governance and administration in Nepal. This should be done with the goal of improving cross-sectoral partnerships at all levels, enabling the stewardship of the National Steering Committee and helping the IHR National Focal Point to advance multihazard health emergency risk reduction, preparedness, readiness, response, recovery and resilience.

Nepali colleagues from various sectors reported effective coordination and collaboration across sectors during emergency situations. There were also numerous discrete examples of ongoing joint activities, such as joint disease outbreak investigations. As another best practice, human health laboratory technicians used veterinary laboratory PCR equipment during the SARS-Cov-2 outbreak to run human samples. Nepali colleagues observed that they would like this coordination and collaboration to be less dependent on individual relationships (more institutionalized) and ongoing (i.e. occurring outside emergency situations). Many relatively easy, cost-effective wins can be achieved quickly for health security in Nepal if cross-sectoral working can be institutionalized. For example, valuable information is currently generated by human and animal health laboratories through the samples they process; health facilities generate clinical information; and a wide range of surveillance, outbreak response and epidemiological information is generated by different institutions according to their roles. Strengthened communication, coordination and effective sharing between these information streams will avoid duplication of information, enable comprehensive risk assessment and holistic decision-making, and leverage actions within different sectors to achieve a higher probability of the intended results being achieved.

In another example, the food safety sector currently has significant laboratory capacity to investigate the aetiology of food poisoning and contamination, while laboratories in the human and animal health sectors have the capacity to investigate the aetiology of foodborne outbreaks by identifying the causative pathogens. Developing and institutionalizing mechanisms for collaboration and joint investigation of foodborne outbreaks, with harmonized protocols and information-sharing through interoperable data platforms, would reduce the national burden of foodborne illnesses without requiring significant additional resources.

4. **To enable the implementation of actions to address the gaps in health security identified by the JEE and the lessons of the COVID-19 pandemic and other emergencies/disasters:**
 - a. **map, review and amend/update existing legal, regulatory and administrative instruments and develop new instruments that are critically needed;**
 - b. **complete a needs assessment to aid the mobilization of adequate resources and efficient allocation of budgets for all relevant sectors and institutions at all administrative levels, in line with current and envisaged future absorptive capacities; and**
 - c. **map essential public health functions; assess the competencies needed; identify current and envisaged gaps in human resources; and develop, endorse and implement (1) a national, multisectoral workforce plan; (2) a national human resources capacity building strategy and action plan; and (3) a national partnerships platform to strengthen systems for One Health security, including for surge response during emergencies.**

Robust laws and regulations, adequate financing and sufficient human resources and capacities are essential for effective action. They are also essential to ensure the resilience of health and other critical systems during emergencies. Though it can be very challenging, due consideration and consistent attention are needed to ensure these enablers are sustained and the priority actions of the JEE can be transformed into the expected outcomes and impact.

5. **Strengthen existing mechanisms and platforms and develop and implement new strategies and partnerships to protect communities from the multidimensional impacts of emergencies through community-centred risk reduction, preparedness, readiness, response, recovery and resilience. This should be done by enhancing coordination and collaboration among all relevant stakeholders to ensure that communities are empowered to take action to reduce/mitigate risks, misinformation, disinformation and lack of information; and engaged throughout the emergency management cycle. Community concerns must be addressed through multisectoral policy and action that incorporates human rights, gender equality and social inclusion.**

The COVID-19 pandemic emphatically illustrated the importance of engaging and empowering communities and co-creating interventions to mitigate the consequences of not only the pandemic, but also the accompanying infodemic. Neither compliance with public health and social measures nor use of countermeasures and vaccines would have been possible without placing communities at the centre of planning, prioritization, implementation and course correction. Special attention also needs to be given to the most vulnerable people in any community: those who are most impacted, both directly in terms of morbidity, mortality and mental health, and indirectly through loss of livelihoods, income and education; reduced prospects for progress; and being pushed back into poverty. Whole-of-government efforts must expand to whole-of-society engagement, protecting the most vulnerable from future emergencies by engaging them in an equitable, inclusive, rights-enhancing manner throughout the emergency risk management cycle.

* * *

The external JEE team is very grateful for the open and honest discussions we had in Kathmandu, and for Nepal's willingness to engage with the JEE process.

We sincerely thank all participants in the JEE, and especially the JEE presenters, their teams and the interpreters who facilitated the discussion, for their hard work in preparing, presenting and hosting the team.

Nepal scores and priority actions

The table below is the summary of the final scores for each technical area (details and priority actions are shown in the respective report chapters), as agreed by the national and external JEE teams. The principles of the scoring system are described in the JEE tool, available from:

<https://www.who.int/emergencies/operations/international-health-regulations/joint-external-evaluations>

Briefly, the scoring is a 5-step likert scale in which a score of 1 designates no capacity, and incremental obligatory criteria for each indicator must be fulfilled to reach the next level. A score of 5 designates that the country has the required capacity and is able to sustain it. Indicators are proxies and are chosen with the aim of representing a probable wider capability than the actual measured factor.

For ease of overview, a "traffic light" colouring system is used, whereby scores of 1 are shown as red; scores of 2 and 3 are yellow; and 4 and 5 are green.



Nepal scores and priority actions

This evaluation was conducted using Version 3 of the JEE Tool. It is important to note that the third edition of the tool reflects the key lessons of COVID-19, in which experiences around the world raised the bar for what can be considered sufficient capacity to prevent, detect, and respond to a public health threats. A capacity score using the third edition of the JEE tool is not therefore directly comparable with scores achieved using any other version of the JEE tool. Likewise, if a country undergoing a second JEE achieves a lower score for a given technical area than it did on a previous JEE, this does not necessarily mean that country has lost capacity.

Scores: 1=No capacity; 2=Limited capacity; 3=Developed capacity; 4=Demonstrated capacity; 5=Sustainable capacity.

Technical areas	Indicator no.	Indicator	Score	Priority actions
Prevent				
P1. Legal instruments	P1.1	Legal instruments	2	<ul style="list-style-type: none"> • Review and update mapping and assessment of relevant legal instruments for IHR implementation at federal and provincial levels, informed by lessons learned during COVID-19, to identify and support priority areas for strengthening. • Develop and/or revise legal or administrative instruments to address priority issues, including by: <ul style="list-style-type: none"> » revising the Infectious Disease Act 2020 BS (1964) and revising/developing other legal instruments, including in biosafety and biosecurity, to support an all-hazards approach; » enabling reporting and information-sharing across sectors, including among One Health stakeholders, to support all-hazards surveillance and response; » institutionalizing and strengthening emergency coordination between the Health Emergency Operations Centre, Provincial Health Emergency Operations Centres, and hub and satellite hospitals; » enabling and, if required, establishing new public health institutions, such as the Centre for Disease Control and National Health Accreditation Authority; and » clarifying and aligning roles and responsibilities to detect, assess, notify, report and respond to public health risks and emergencies as they emerge and evolve (including multihazard risks). • Develop internal governance protocols and increase advocacy among key stakeholders and the community to improve compliance with and enforcement of existing legal frameworks, including the Public Health Service Act. • Strengthen monitoring and evaluation of gender equality and social inclusion policies and programmes by utilizing existing HMIS data and internal mechanisms.
	P1.2	Gender equity and equality in health emergencies	3	

Technical areas	Indicator no.	Indicator	Score	Priority actions
P2. Financing	P2.1	Financing for IHR implementation	3	<ul style="list-style-type: none"> • Support the allocation of finances to the costed National IHR Plan, ensuring involvement of all relevant sectors, by: <ul style="list-style-type: none"> » aligning planning and budgets to ensure harmonization across all three tiers of government; » securing required funding as per the costed IHR plan; and » developing and implementing an IHR Budget Code. • Institutionalize the National Health Account across all three tiers of government, and build the capacity to use it through training programmes at all three levels. • Develop a monitoring framework to track all types of EDP financing, to improve distribution and mobilization of funds and avoid duplication. • Increase health sector budgets and absorption rate by: <ul style="list-style-type: none"> » undertaking a needs assessment to ensure adequate human resources at all three tiers of government; and » improving public financial management capacity by building capacity for rational planning, budgeting, accounting, and implementing and reporting on activities related to the IHR and public health emergencies. • Strengthen social security mechanisms that impact health, through: <ul style="list-style-type: none"> » effective implementation of the Health Insurance Scheme; » securing compensation funds in all relevant departments as costed in the IHR Plan; and » revising the Social Security plan and undertaking public advocacy to increase uptake.
	P2.2	Financing for public health emergency response	4	
P3. IHR coordination, national IHR focal point functions and advocacy	P3.1	National IHR Focal Point functions	2	<ul style="list-style-type: none"> • Prepare and develop a consolidated multisectoral National Plan for Health Security that is prioritized, costed and implemented, with clear roles and responsibilities for all relevant stakeholders, and an appropriate monitoring and evaluation framework. • Develop a national standard operating procedure (SOP) for coordination and communication between the IHR National Focal Point and the relevant bodies within national and subnational governments for implementation of the IHR. • Establish technical area, sectoral and subnational focal points for multisectoral coordination and implementation of the IHR (2005). • Intensify collaboration among decision-makers and relevant stakeholders at all levels through regular advocacy, coordination, and monitoring and evaluation to strengthen IHR capacities. • Establish a structural unit under the IHR NFP for coordinating IHR-related activities.
	P3.2	Multisectoral coordination mechanisms	3	
	P3.3	Strategic planning for IHR, preparedness or health security	1	

Technical areas	Indicator no.	Indicator	Score	Priority actions
P4. Antimicrobial resistance (AMR)	P4.1	Multisectoral coordination on AMR	3	<ul style="list-style-type: none"> • Endorse the costed Multisectoral National Action Plan for AMR, and ensure adequate, sustainable allocation of resources for its implementation, monitoring and evaluation, with oversight from the Multisectoral Steering Committee on AMR.
	P4.2	Surveillance of AMR	4	
	P4.3	Prevention of MDRO	3	<ul style="list-style-type: none"> • Strengthen laboratory capacity in a step-wise manner, at all tiers and across all sectors, for quality and timely AMR diagnosis and MDRO detection, including by training personnel and ensuring availability of sufficient human resources, infrastructure, equipment and consumables. • Expand AMR surveillance sites up to Provincial level across all sectors, including tertiary care, academic and research institutions, and ensuring geographical representation. • Reinforce the optimal use of antimicrobials in human health and animal health through: <ul style="list-style-type: none"> » strengthening the national regulatory system and the capacity to monitor and enforce rational prescription, consumption, quality and sales of antimicrobials in the human and animal health sectors; » enhancing public awareness of the threat of AMR and appropriate use of antimicrobials across all sectors through the education system and media campaigns in collaboration with stakeholders including but not limited to those in civil society and the private sector; » updating the Drug Act, incorporating the full scope of the animal health and agriculture sector; and » updating the Feed Act to address the use of antimicrobials in animal feed. • Expand (in a stepwise manner) the use of multidisciplinary teams/Antimicrobial Stewardship Programmes (AMSP) to improve coordinated AMR management in healthcare facilities, including by training personnel and ensuring the availability of sufficient human resources for IPC, laboratory diagnostics, AMR/HAI surveillance and AMSP. • Develop, adopt and implement good husbandry practices, biosecurity guidelines and SOPs to optimize the use of antimicrobials in livestock farms.
	P4.4	Optimal use of antimicrobial medicines in human health	3	
	P4.5	Optimal use of antimicrobial medicines in animal health and agriculture	2	

Technical areas	Indicator no.	Indicator	Score	Priority actions
P5. Zoonotic disease	P5.1	Surveillance of zoonotic diseases	2	<ul style="list-style-type: none"> • Following the One-Health Strategy, 2019: <ul style="list-style-type: none"> » endorse the One Health Action Plan; » develop and implement a joint risk-based surveillance plan based on the One Health concept, and strengthen the capacity of all relevant stakeholders to conduct regular surveillance and response; » develop contingency plans and SOPs for prioritized zoonotic diseases and perform related simulation exercises; and » develop multisectoral operational mechanisms to share information and coordinate responses to outbreaks of endemic, emerging or re-emerging zoonotic diseases by the human health, animal health and environmental sectors. • Develop an animal identification, registration and traceability system for animals and products of animal origin that enables rapid response to outbreaks of endemic, emerging or re-emerging zoonotic diseases. • Develop and adopt legal instruments to support all the above-mentioned activities.
	P5.2	Response to zoonotic diseases	2	
	P5.3	Sanitary animal production practices	2	
P6. Food safety	P6.1	Surveillance of foodborne diseases and contamination	2	<ul style="list-style-type: none"> • Develop a list of priority foodborne diseases. • Develop a multisectoral disease surveillance system in feed and food that includes case definitions; protocols for source investigations; and mechanisms for response and management of food safety emergencies. • Map existing laboratory resources at national, provincial and local level. Based on the results, develop a plan for strengthening and/or maximizing resources to enhance the capacity and competencies of laboratories, with particular focus on emerging issues of food safety (e.g. pesticide residues, veterinary drug residues, chemical and microbiological contaminants, trans-fats, etc.). • Ensure that the national CODEX and INFOSAN Secretariats coordinate with national, provincial and local counterparts. Establish the necessary plans and SOPs with involvement of all relevant sectors and full consideration of the IHR (2005).
	P6.2	Response and management of food safety emergencies	1	

Technical areas	Indicator no.	Indicator	Score	Priority actions
P7. Biosafety and biosecurity	P7.1	Whole-of-government biosafety and biosecurity system is in place for human, animal and agriculture facilities	1	<ul style="list-style-type: none"> • Develop policy, legislation, a regulatory framework and a strategic plan to enforce a national biosafety and biosecurity system, and establish a multisectoral Biosafety and Biosecurity Committee at ministerial level. • Develop a list of priority high threat pathogens, working from the One Health perspective, and regularly update an inventory of these pathogens and the biological materials stored and handled in different laboratories and institutions (including academic and research labs). • Develop a licensing mechanism and guidelines for all facilities storing specific high-consequence pathogens, limiting the number of such facilities to a minimum. • Conduct a national training needs assessment and develop training programmes based on the results. Review and adapt the existing Biosafety and Biosecurity Training Manual using the One Health approach and incorporating risk-based assessments as an integral part of training. • Develop national capacity by allocating the resources necessary for calibration and maintenance of biosafety and biosecurity equipment.
	P7.2	Biosafety and biosecurity training and practices in all relevant sectors (including human, animal and agriculture)	1	
P8. Immunization	P8.1	Vaccine coverage (measles) as part of national programme	4	<ul style="list-style-type: none"> • Achieve and sustain >95% MCV II coverage at all administrative levels by 2023 by: <ul style="list-style-type: none"> » aligning three documents: full portfolio planning, the National Immunization Strategy, and the Urban Immunization Strategy; » Microplanning for vaccination in urban areas and slums, , including with mapping exercises; and » Expanding the reach of mobile clinics to these hard-to-reach and/or vulnerable areas, with particular focus on slums. • Ensure the repair and maintenance of the cold chain system at all levels by 2030, and ensure sufficient human resources for proper maintenance of cold chain equipment at all levels, by: <ul style="list-style-type: none"> » continuing work to enhance the capacity of cold chain equipment handlers; and » recruiting highly trained cold chain personnel. • Improve outbreak detection by 2030: in collaboration with the IHR NFP strengthen VPD surveillance at all levels through the use of IBS and EBS, taking into consideration the integrated disease surveillance system and Polio Transition Plan, and reviewing the possibilities of public/private partnerships. • Develop national vaccine wastage and immunization waste management plans to move further toward self-sustainability.
	P8.2	National vaccine access and delivery	4	
	P8.3	Mass vaccination for epidemics of VPDs	4	

Technical areas	Indicator no.	Indicator	Score	Priority actions
Detect				
D1. National laboratory systems	D1.1	Specimen referral and transport system	3	<ul style="list-style-type: none"> • Ensure that all recommended priority actions, including strategic planning, are included in the annual budgets of relevant sectors. • Develop and implement national guidelines for specimen referral and transport between different tiers of laboratories for all priority diseases, taking a One Health approach and using support from public/public-private partnerships to reach all levels. • Review, endorse/approve and implement all relevant strategic documents and initiatives, using a One Health approach, to strengthen laboratory capacity for detection of priority and notifiable diseases at all levels. These should include the National Laboratory Strategy; laboratory capacity mapping; setting standards for biomedical equipment, IVD reagents and kits; developing regulatory mechanisms for vendor licensing, IVD kits/reagents, market surveillance, supply chain management etc.; a National Essential In Vitro diagnostics list for the human sector; national laboratory standards and licensing protocols for veterinary labs; and a tiered diagnostic testing plan for the veterinary sector. • Develop, implement and test a formal mechanism for coordination and information/data sharing between laboratories and epidemiology and other relevant stakeholders, using a One Health approach and leveraging existing multisectoral task force/Steering Committee structures. • Improve the laboratory quality management system, through: <ul style="list-style-type: none"> » developing the capacity of the laboratory workforce through joint initiatives in cross-cutting areas including but not limited to AMR, biosafety/biosecurity, lab quality and diagnostics; and » expanding existing programmes for accreditation, licensing, and/or stepwise laboratory quality improvement towards accreditation for national and subnational laboratories (12 in the human health sector and 11 in the animal health sector), in accordance with ISO standards 15189 and 17025 and NEQAS (ISO 17043). • Increase the capacity of national and selected provincial laboratories to deal with high threat, emerging and re-emerging pathogens, using a One Health approach, through: <ul style="list-style-type: none"> » building national capacity for diagnostic testing, molecular characterization and sequencing of priority pathogens; and » supporting the NPHL and CVL in operational research, through national and international collaboration, for enhanced preparedness and response under IHR.
	D1.2	Laboratory quality system	2	
	D1.3	Laboratory testing capacity modalities	3	
	D1.4	Effective national diagnostic network	3	

Technical areas	Indicator no.	Indicator	Score	Priority actions
D2. Surveillance	D2.1	Early warning surveillance function	3	<ul style="list-style-type: none"> • Develop, implement, test and strengthen a National Alert and Response Framework that includes: <ul style="list-style-type: none"> » event-based surveillance (i.e. call centres, media monitoring including EIOS, and community and hospital surveillance); » indicator-based surveillance (in health facilities and laboratories); and » risk-based surveillance systems. • Develop and implement a multisectoral risk assessment and Outbreak Response Plan by 2025. • Develop and implement a multisectoral architecture and platform for sharing health data and information, and ensure it is used for joint sharing and analysis of data at all levels, in both the public and the private sectors, for surveillance and response. • Strengthen the capacity of the multisectoral workforce at national and subnational level through a sustainable training programme that enhances surveillance and response capacities under the IHR.
	D2.2	Early warning surveillance function	2	
	D2.3	Analysis and information sharing	3	
D3. Human resources	D3.1	Multisectoral workforce strategy	2	<ul style="list-style-type: none"> • Develop, endorse and implement a multisectoral workforce plan for IHR core capacities, involving all relevant stakeholders and leveraging the One Health National Steering Committee. • Develop and endorse national a workforce surge strategy for responses to public health emergencies, and test it using simulations. • Extend IHR core competency assessment and gap analysis to all relevant sectors other than health, and provide training programmes/initiatives to address gaps, for areas including but not limited to: <ul style="list-style-type: none"> » field epidemiology; » emergency medical technicians » rapid response teams; » laboratory leadership; and » surveillance.
	D3.2	Human resources for implementation of IHR	2	
	D3.3	Workforce training	3	
	D3.4	Workforce surge during a public health event	1	

Technical areas	Indicator no.	Indicator	Score	Priority actions
Respond				
R1. Health emergency management	R1.1	Emergency risk assessment and readiness	1	<ul style="list-style-type: none"> • Develop a multisectoral, multi-hazard health emergency management plan that includes an emergency risk and readiness assessment and preparedness and response plans at both national and intermediate levels. • Develop a Health Sector Emergency Response Action Plan. • Develop a range of HEOC-specific plans including but not limited to an emergency operations plan; a civil-military-specific plan; a strategic humanitarian response plan; and a business continuity plan. • Develop SOPs for pre-deployment, deployment and post-deployment of RRTs and EMTs. • Development protocols for rapid procurement and replenishment of emergency logistics. • Build staff capacity for Public Health Emergency Management (PHEM) through training and national and international networking of trained personnel.
	R1.2	Public health emergency operations centre (PHEOC)	2	
	R1.3	Management of health emergency response	3	
	R1.4	Activation and coordination of health personnel in a public health emergency	2	
	R1.5	Emergency logistic and supply chain management	2	
	R1.6	Research, development and innovation	1	
R2. Linking public health and security authorities	R2.1	Public health and security authorities (e.g. law enforcement, border control, customs) are linked during a suspect or confirmed biological, chemical or radiological event	1	<ul style="list-style-type: none"> • Make necessary adjustments to existing legal provisions to ensure the creation of a multihazard, multisectoral Plan of Action that includes CBRN events and defines the specific roles and responsibilities of key stakeholders. • Enhance resource planning to create a budget plan for upgrading the technical competencies of key government institutions and entities across sectors, including the National DRR and Management Authority, the EOCs, the Department of Hydrology and Metrology, Search and Rescue, diagnostic facilities and other relevant stakeholders in disaster and public health emergency preparedness. • Develop an integrated, multisectoral capacity building programme for all-hazards risk management, involving stakeholders from all relevant sectors.

Technical areas	Indicator no.	Indicator	Score	Priority actions
R3. Health services provision	R3.1	Case management	4	<ul style="list-style-type: none"> • Develop a strategic tool for further risk assessment in order to define and update the list of priority conditions. • Strengthen the referral mechanism for routine health care and emergencies by developing referral guidelines and an implementation plan. • Strengthen the reporting system from health facilities, including private health facilities, clinics and teleconsultation services, by promoting use of the digital health system. • Improve the operationalization of MSS by expanding its use to all healthcare facilities, and promote the implementation of the recommended actions from the MSS assessments. • Explore mechanisms for strengthening partnerships between key stakeholders during routine health care and emergencies, in order to ensure that essential health services are maintained.
	R3.2	Utilization of health services	1	
	R3.3	Continuity of essential health services (EHS)	4	
R4. Infection prevention and control (IPC)	R4.1	IPC programmes	2	<ul style="list-style-type: none"> • As soon as possible, ensure availability of basic infrastructure and supplies to assure patient and staff safety from infection in all health care facilities. • While seeking formal endorsement of the existing IPC Action Plan by the MOHP, accelerate its implementation at the operational level. • Building on the recommendations of the 2019 national IPC assessment, develop, finalize and endorse a comprehensive National IPC Framework that includes: <ul style="list-style-type: none"> » a national IPC committee with clear TORs; » dedicated staff and/or a unit for national and regional implementation of the IPC programme; » a dedicated budget for activities outlined in the National IPC Framework at both national and sub-national level; » regular monitoring and feedback of IPC-related activities; and » consideration of including or aligning with arrangements for infection control for animal health. • Develop a comprehensive plan to commence HCAI surveillance in selected federal hospitals by the end of 2023; secure the necessary resources and implement it; then proceed stepwise to include provincial and local level hospitals by 2030. This plan should include connecting HCAI surveillance to existing AMR surveillance and linking it to EWARS, MPDSR and IHMIS; and establishing a national system of data collection and analysis. • Based on assessed needs, expand capacity building activities through: <ul style="list-style-type: none"> » training healthcare workers and support staff; » a skills exchange programme starting in 2023; and » strengthening hospitals to become centres of excellence for IPC and patient safety by 2030.
	R4.2	HCAI surveillance	2	
	R4.3	Safe environment in health facilities	2	

Technical areas	Indicator no.	Indicator	Score	Priority actions
R5. Risk communication and community engagement (RCCE)	R5.1	RCCE systems for emergencies	2	<ul style="list-style-type: none"> • Strengthen pre-service and in-service training programmes for all relevant stakeholders (including those outside the health sector) to enhance risk communication and community engagement. • Strengthen the RCCE system for emergency response at central, provincial and local levels by ensuring access to sufficient competent staff and appropriate technology and equipment. • Develop a mechanism to guide and inform evidence-based infodemic management, which includes but is not limited to interventions such as behavioural insight research, surveys, focus group discussions and social listening. • Strengthen existing mechanisms and platforms to facilitate coordination and collaboration between different RCCE stakeholders, and establish new ones where necessary. Develop SOPs that clearly define the roles and responsibilities of different stakeholders during emergencies.
	R5.2	Risk communication	2	
	R5.3	Community engagement	2	

IHR related hazards and points of entry and border health

PoE. Points of entry and border health	PoE.1	Core capacity requirements at all times for PoEs (airports, ports and ground crossings)	3	<ul style="list-style-type: none"> • At designated points of entry: <ul style="list-style-type: none"> » complete the development and validation of the airport's Public Health Emergency Plan and incorporate it into the Airport Emergency Plan; » develop airport SOPs for detection, health assessment, notification and referral to healthcare facilities of suspected ill travellers; and » enhance routine activities including food and water safety, waste management and vector control, to align them with IHR requirements and WHO guidelines. • Strengthen coordination between POE and the national surveillance system by establishing criteria for reporting, detection procedures, contact tracing, information flow and electronic data transmission. • Consider empowering the POE programme by specifying its place in the MOHP organizational chart and allocating all resources necessary to fulfil IHR requirements at POE.
	PoE.2	Public health response at PoEs	2	
	PoE.3	Risk-based approach to international travel-related measures	2	
CE. Chemical events	CE.1	Mechanisms established and functioning for detecting and responding to chemical events or emergencies	2	<ul style="list-style-type: none"> • Develop a multisectoral disaster management plan for chemical emergencies that clarifies the roles, responsibilities, and accountability of all stakeholders and focuses on risk mapping and surveillance (expected timeline: three years). • Ensure that the Plan establishes the roles of CBRN responders and specific healthcare facilities in the diagnosis and treatment of chemical events, and links with the MOPH (expected timeline: 1.5 years). • Develop protocols and/or guidelines for case management with regard to chemical hazards (expected timeline: 3.5 years). • Increase human resources to meet the needs for managing chemical events, and increase cooperation and integrated training and exercises with international partners (expected timeline: five years).
	CE.2	Enabling environment in place for management of chemical event	1	

Technical areas	Indicator no.	Indicator	Score	Priority actions
RE. Radiation emergencies	RE.1	Mechanisms established and functioning for detecting and responding to radiological and nuclear emergencies	1	<ul style="list-style-type: none"> Formulate a Radiation Emergencies Preparedness and Response Plan (timeline: two years) that identifies a Radiation Protection Officer; articulates the roles and responsibilities of key stakeholders; and designates a focal person at each concerned national authority for communication and coordination with the IHR NFP.
	RE.2	Enabling environment in place for management of radiological and nuclear emergencies	1	<ul style="list-style-type: none"> Establish and activate the regulatory body provided for in the Radioactive Material (Usage and Regulation) Act, 2077 BS (2020), and develop a policy and strategic plan for ensuring the safe use of radiation and management of radioactive materials and waste in Nepal (timeline: one year). Establish and maintain an inventory of all facilities with radioactive sources in Nepal (timeline: 1.5 years). Provide a training programme on radiation safety and emergency response for occupationally exposed workers and responders at all levels (timeline: three years).

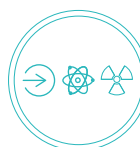
PREVENT



P1. Legal instruments

Introduction

The International Health Regulations (IHR) (2005) provide obligations and rights for States Parties. In some States Parties, implementation of the IHR (2005) may require new or modified legislation. Even if new or revised legislation may not be specifically required, States may still choose to revise some regulations or other instruments in order to facilitate IHR implementation and maintenance. Implementing legislation could serve to institutionalize and strengthen the role of IHR (2005) and operations within the State Party. It can also facilitate coordination among the different entities involved in their implementation. See detailed guidance on IHR (2005) implementation in national legislation. In addition, policies that identify national structures and responsibilities as well as the allocation of adequate financial resources are also important.



Target

Adequate legal instruments for States Parties to support and enable the implementation of all their obligations and rights created by the IHR. The development of new or modified legal instruments in some States Parties for the implementation of the Regulations. Where new or revised legal instruments may not be specifically required under a State Party's legal system, the State may revise some laws, regulations or other legal instruments in order to facilitate their implementation in a more efficient, effective or beneficial manner.

Level of capabilities

Nepal has several legal instruments at national and subnational levels that support the country's obligations and implementation of core capacities under the IHR. Legal instruments cover a wide range of risks and functions in the health sector and other sectors that are relevant to public health emergency and response.

The Constitution of Nepal (2015) establishes a federal system of government with three levels – federal, provincial, and local – each of which is assigned both exclusive and shared powers relevant to public health emergencies. The Constitution also confers several fundamental rights – including the rights to equality, free basic health services, a clean and healthy environment, safe motherhood and reproductive health, as well as a range of other rights relating to health – and directs all levels of government to pursue policies to give effect to those rights.

Multiple legal instruments have been enacted since the adoption of the new federal system of government. The Public Health Services Act 2018 (PHS Act) establishes a broad, overarching framework covering most health functions, and includes basic provisions for public health emergency planning; declaring and managing public health emergencies at all levels and from multiple hazards; and managing risks associated with infectious diseases. The Disaster Risk Reduction and Management Act 2017 (DRRM Act), administered by the Ministry of Home Affairs, establishes structures, roles and responsibilities for whole-of-society and whole-of-government disaster risk management, including relating to epidemics and other health events.

Structures established and underpinned by the DRRM Act, including the National Emergency Operations Centre, Health Emergency Operations Centre and local disaster management committees, supported the COVID-19 response; but overall coordination of the response was managed by a central committee established by executive order and under the leadership of the Deputy Prime Minister. The Constitution preserves the application of existing laws and the federal government relied on its broad powers under the Infectious Diseases Act 2020 to make orders implementing public health measures during the pandemic.

There are specific legal frameworks to detect and manage risks from other sources (including food, the environment and animals); regulate the use of medicines; and support access to essential health services. Systematic mapping and preliminary analysis of legal instruments relevant to IHR was last conducted in 2007.

Nepal has prioritized legislative and administrative interventions to address gender equality. In addition to guaranteeing rights relevant to gender equality and social inclusion, the Constitution prohibits discrimination by the State on the grounds of sex; guarantees representation of women in federal, provincial and local legislatures and public offices, including those of President and Vice-President; and establishes national commissions for human rights, women, Dalit, inclusion and Muslims. Key strategies in the Gender Equality and Social Inclusion Strategy of the Health Sector (2018) include institutionalizing gender equality and social inclusion assessment and analysis into policy, planning and budgeting; and assessing and analysing gaps in access to and use of health services. While Nepal has made significant improvements in this area, closing over 69% of its gender gaps since 2006, the Global Gender Gap Health and Survival subindex ranks it 109th in the world.

Indicators and scores

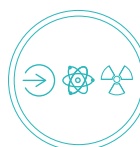
P1.1 The State has assessed, adjusted and aligned its legal instruments in all relevant sectors to enable compliance with the IHR – Score 2

Strengths

- Cross sectoral mapping and preliminary analysis of legal instruments relevant to the IHR was done in 2007.
- The Constitution guarantees rights relating to health, including the right to basic and emergency services. To effect this, legal instruments define packages of free basic essential services that are provided by local governments and coordinated by the Ministry of Health and Population (MOHP).
- Legal instruments allocate different responsibilities for health and for managing health-related risks to all levels of government. Under the PHS Act, federal, provincial and local governments are required to develop and implement emergency health plans, and have powers to declare public health emergencies in their areas.
- A range of legal and administrative instruments contains various mechanisms, including committees with high-level leadership, for coordination across sectors and levels of government.
 - » The PHS Act establishes the National Public Health Committee, chaired by the Minister of Health and including secretaries of other relevant ministries. The Act also allows the government to engage and direct nongovernment and private health facilities and resources during emergencies.
 - » The DRRM Act establishes the National Council for Disaster Risk Reduction and Management, chaired by the Prime Minister, and a Minister-level Executive Committee to coordinate implementation of national policies. Subnational multisectoral committees are also established.
 - » The One Health Strategy 2076 BS establishes high-level multisectoral technical committees at national level to coordinate One Health activities.
- The Immunization Act 2016 supports children's rights to access high quality vaccines, and establishes sustainable financing mechanisms for the immunization programme.
- Nepal has legal instruments that address risks to health from multiple hazards, and several legal frameworks that could be activated for an emergency response, depending on the source and scope of the event.
- The powers afforded to government to conduct surveillance and respond to risks are basic but flexible, and include the power to make subsidiary legislation.

Challenges

- Legal instruments have not been mapped since the adoption of the new federal Constitution.
- While there are multiple legal frameworks that could be activated to respond to public health emergencies, there is some overlap and uncertainty in how they interact and should be used to respond to different risks.
- There is a lack of alignment between legal instruments addressing risks arising in different sectors. In particular, legal instruments do not contain measures to support the One Health approach (such as notification between sectors, information sharing and coordinated response activities).
- Institutional strengthening to effect the shift from a unitary to federal system of government is ongoing. Legal frameworks developed after the adoption of the Constitution are in the process of being implemented and were not fully used during the COVID-19 pandemic. However: ad hoc mechanisms such as the COVID-19 Crisis Management Coordination Centre, which was established by executive order, functioned effectively during the pandemic and may provide opportunities to guide further institutional strengthening.
- Nepal's legal frameworks require strengthening to support (a) disease and event-based surveillance; (b) core capacities at points of entry (POE), including regulating entry of travellers; and (c) management of risks associated with chemical and biological agents.
- Powers to respond to health risks and public health emergencies are flexible, but lack clear criteria and procedures for their use.



P1.2 Gender equity and equality in health emergencies – Score 3

Strengths

- The Constitution of Nepal contains multiple mechanisms to promote gender equality, including protecting the rights of women. It reserves 33% of parliamentary positions for women, guaranteeing representation in public offices, and established the National Women Commission (NWC). The NWC's functions include formulating and monitoring policies and programmes and making recommendations to government.
- The PHS Act includes maternal and reproductive health services in its package of free basic health services to be provided by the State.
- The Right to Safe Motherhood and Reproductive Health Act 2018 contains measures to make safe, high quality maternal and reproductive health services available and accessible. These include guaranteeing access to emergency obstetric care and safe abortion services.
- The Disaster Risk Reduction and Management Act 2019 requires the Executive Committee to develop special plans for women and other populations.
- Health sector policies and strategies, including the National Health Sector Strategy (2015-2020) and Gender Equality and Social Inclusion Strategy of the Health Sector (2018), position gender equality as integral to achieving Nepal's health priorities.
- Gender equality and social inclusion are built into health systems planning, programming and budgeting. This has contributed to effective programmes such as hospital-based one stop crisis management centres, which provide integrated health, psychosocial, legal, education, safe housing, and rehabilitation services to victims of gender-based violence.
- Routine information collection and reporting systems such as DHIS2 and the Early Warning and Reporting System (EWARS) collect, analyse and disseminate data disaggregated by sex, ethnicity, and other characteristics.
- Female community health volunteers are a key part of the health system in rural areas, providing health information and basic primary services, and they made important contributions during the COVID-19 pandemic.

Challenges

- Women – and particularly those working in informal sectors – were disproportionately impacted by the COVID-19 pandemic, experiencing disruptions to maternal and reproductive health services, increases in gender-based violence and loss of income.
- Nepal has done no systematic assessment or analysis of gender gaps specific to IHR capacities.
- Stronger monitoring and evaluation of the implementation and impact of gender equality and social inclusion activities is required.

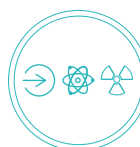
Recommendations for priority actions

- Review and update mapping and assessment of relevant legal instruments for IHR implementation at federal and provincial levels, informed by lessons learned during COVID-19, to identify and support priority areas for strengthening.
- Develop and/or revise legal or administrative instruments to address priority issues, including by:
 - » revising the Infectious Disease Act 2020 BS (1964) and revising/developing other legal instruments, including in biosafety and biosecurity, to support an all-hazards approach;
 - » enabling reporting and information-sharing across sectors, including among One Health stakeholders, to support all-hazards surveillance and response;
 - » institutionalizing and strengthening emergency coordination between the Health Emergency Operations Centre, Provincial Health Emergency Operations Centres, and hub and satellite hospitals;
 - » enabling and, if required, establishing new public health institutions, such as the Centre for Disease Control and National Health Accreditation Authority; and
 - » clarifying and aligning roles and responsibilities to detect, assess, notify, report and respond to public health risks and emergencies as they emerge and evolve (including multihazard risks).
- Develop internal governance protocols and increase advocacy among key stakeholders and the community to improve compliance with and enforcement of existing legal frameworks, including the Public Health Service Act.
- Strengthen monitoring and evaluation of gender equality and social inclusion policies and programmes by utilizing existing HMIS data and internal mechanisms.

P2. Financing

Introduction

The implementation of the IHR, including development of the core capacities, requires adequate financing. State Parties should ensure sufficient allocation of funds for IHR implementation.



Target

States Parties ensure provision of adequate funding for IHR implementation through the national budget or other mechanisms. Country has access to financial resources for the routine implementation of IHR capacities and financial resources that can be accessed on time and distributed for readiness and response to public health emergencies, is available.

Level of capabilities

The Public Health Service Act (PHSA) 2018 gives power to the MOHP and provincial governments to set up an emergency health treatment fund for treatment of the “poor and destitute,” and authorizes establishment of a separate health fund to control the production of goods and activities that affect public health. Resources for this fund shall come from the government of Nepal, provincial and local governments, nongovernmental and private organizations and institutions, and foreign organizations and institutions – thus making the fund instrumental in obtaining international support.

The National Natural Resources and Fiscal Commission (NNRFC) is the constitutional body charged with ensuring just and equitable distribution of natural and fiscal resources between all three levels of government. The Ministry of Finance (MOF) consolidates policies and programmes from sectoral ministries; sets budget ceilings and guidelines for ministries based on the decisions of the Resource Council/Committee; and sends estimates of revenue transfer and equalization grants to provincial and local governments. After coordinating with each ministry and authorities at provincial and local levels, the National Planning Commission (NPC) prepares an annual guideline for planning and financing all activities of the government of Nepal for three fiscal years. The guideline addresses the Sustainable Development Goals (SDGs) 2030 as a key guiding document for planning.

While Nepal does not yet have a national, integrated IHR Plan – or the National Action Plan for Health Security (NAPHS) suggested in the IHR monitoring and evaluation (M&E) framework – the government does have several strategic plans pertinent to building and maintaining those capacities, including the multisectoral One Health Strategy 2019 and the MOHP National Health Security Strategy (NHSS) 2016-2021. The Epidemiology and Disease Control Division (EDCD) in the MOHP Department of Health Services (DOHS) is the responsible government agency for implementation of IHR related activities. The MOHP allocates funds to the EDCD for such activities.

Federalism¹ has opened increased fiscal space for health. Some subnational governments have been able to make the most of this opportunity, while others need to be capacitated to do so.

The government of Nepal contributed 71.4% of its total health sector budget in 2022/23; of the remainder, 5.8% comes from grants, and 22.8% from loans. To mobilize finance for IHR-related activities at provincial and local government level, the MOHP allocates needs-based funding to each provincial or local government on a conditional basis to implement MOHP-specified programmes and activities. Other relevant divisions responsible for activities related to strengthening IHR core capacities – such as the

¹ Nepal started practicing federalism in 2017/18 as soon as local elections were completed; but provincial governments only came into existence in the middle of 2017/18.

National Public Health Laboratory and the National Health Education, Information and Communication Centre – also have allocated funds for each fiscal year.

When extra budget is required the Appropriation Act provides a legal framework for mobilizing budgets from other programmes and ministries to where they are needed, and mobilizing federal line ministry funding to provincial and local levels.

The federal government has developed and implemented the Public Financial Management Strategic Framework (2020–2025) and Procurement Improvement Plan (2017–2023). The analysis of the first five years of federalism in Nepal notes that these need to be implemented at provincial and local level, particularly to ensure that local governments can take advantage of economies of scale while procuring medicines or contracting.

Budget preparation and endorsement are done through planning commissions, parliaments and assemblies at different levels of government, in a shift away from spending on programmes and towards line items. Two-fifths of the health budget is now spent on salaries and wages. Most activities related to outcomes of the NHSS are allocated to the federal government. Over the years, the MOHP has allocated more than half of its budget to programmes that contribute directly to women’s wellbeing and the reduction of poverty.

Local, provincial and federal governments hold tri-monthly reviews of their activities to guide planning and budgeting of activities. The MOHP also conducts a National Joint Annual Review programme to review its entire budget in terms of the resources needed for the health sector. The MOHP and provincial government use National Health Accounts (NHAs) to monitor health expenditure, including gathering data on out-of-pocket expenditure.

Internal and external audits are done yearly for each agency to monitor spending. Internal controls follow the relevant endorsed guidelines (for example, the New Financial Procedures and Fiscal Accountability Act 2019, the Financial Comptroller General Office (FCGO) Directives and the Financial Management Improvement Plan, all of which are guided by the Nepal Health Sector Public Financial Management Strategic Framework.

The MOHP’s budget absorption has been weak, and the ministry tends to surrender some budget towards the end of the financial year. The health sector’s low absorption is the cumulative effect of weak absorption at the MOHP and other ministries and internal source absorption in provincial and local governments. The absorptive capacity of local governments has decreased in recent years, but provincial government expenditure does not follow a definitive pattern.

Since the implementation of federalism, the MOHP budget has tripled from NPR 33.3 billion in 2017/18 to NPR 101 billion in 2021/22, a rise attributable to the COVID-19 response. Budget absorption declined from 82% in 2017/18 to 67% in 2020/21. Only 50% of the capital budget and 72% of the recurrent budget could be spent in 2020/21, and only 43% of pool fund activities could be implemented in 2020/21. Capital expenditure is not increasing as expected compared to recurrent expenditure.

Lack of efficiency in allocation and execution, failure to mobilize development aid according to commitments, and poor compliance with fiscal discipline are the major problems in public finance management in Nepal, including for the health sector. Additional problems include demand for more budget than there is capacity to spend; projects not completed to the stipulated timeframe, cost, quantity and/or quality; an excessive number of ongoing projects; and lack of good project governance.

Despite the gradual expansion of the health insurance scheme, it still covers only 11% of the population, implying the poor and vulnerable are not covered. Out-of-pocket expenditure is still the dominant share of health care expenditure.

A 2009 self-assessment of core capacities and action plans for IHR (2005) noted that Nepal had no budget allocated to implementing the IHR and/or developing IHR core capacities other than some support from WHO. Since then there has been advocacy (from the MOHP to the MOF and the NPC) for budgets to implement the IHR/develop IHR core capacities. Current financing for pandemic/ epidemic preparedness is much lower than what has been recommended globally, and the costing of the National Preparedness Plan shows that an additional one-fifth of current financing is needed to implement the plan to full capacity.

The MOHP needs to improve alignment of its policy priorities and expenditures with budgets at all levels of government. At present there is no single platform to ensure harmonization of budget planning and programme implementation across the three levels, and this is exacerbated by challenges with external development partners (EDP) such as late release of funds and burdensome financial reporting procedures. While other sectors should continue advocating for appropriate sectoral budgets, it is also crucial for the MOHP to ensure budget allocations that allow it to address health issues in sectors other than human health. It is also important that the relevant ministries work together with the MOF to avoid duplication and waste of resources while funding all IHR-relevant activities for sectors other than human health (such as animal health, security, etc.), in order to implement the national multisectoral IHR plan.

Indicators and scores

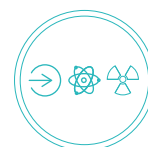
P2.1 Financing for IHR implementation – Score 3

Apparent funding gaps for the health sector (specifically for pandemic preparedness) and the scope for improvement in budgetary allocations at all levels of government led the JEE team to advocate for a score of 2 instead of 3. However, the government assured the JEE team that while there is low absorption capacity, there is no funding gap as the government can generate domestic resources, and a mechanism is already in place to improve budgetary allocations across the three tiers of the government.

Strengths

- The National Health Sector Strategy and its Implementation Plan 2016-2021 identify activities related to the IHR and are currently being revised for 2022-2030 (in line with the SDGs). The updated strategy mentions the development and strengthening of multisectoral coordination mechanisms for IHR implementation with periodic review, evaluation and updates.
- The NHSSP 2016-2021 was costed with allocations for each year.
- Funding allocations are done as per the NHSSP and in line with national and global priorities, previous years' achievements in budget utilization and implementation, and as needed. When necessary funds are limited, funding can be allocated from other programmes (as was done during COVID-19).
- For budget transparency and accountability, the Office of the Auditor General of Nepal is responsible for inspecting the performance and efficiency of all financial transactions and government expenses. Online Budget Information Management systems are in place. If irregularities are found, concerned authorities and officials are held accountable for payment and, if necessary, reported to the Commission for Investigation of Abuse of Authority.²
- An Integrated Financial Management Information System (IFMIS) provides financial information management for each level to allow timely dissemination of funds. Examples include the LMBIS (Line Ministry Budget Information System), the BMIS (Budget Management Information System) at the Ministry of Finance, and the PLM BIS (Province Line Ministry Budget Information System).

² This Commission is an apex constitutional body for corruption control. The Constitution empowers the Commission to investigate cases against persons holding any public office, and their associates, who are suspected of corruption and/or abuse of authority.



Challenges

- There is no National Action Plan for Health Security (NAPHS).
- A mechanism is needed to track and consolidate budget allocation and spending for health at each level of government.
- The development of a monitoring framework for tracking all types of EDP activities, budget and expenditure would streamline mobilization of funds.
- There is an urgent need for an integrated electronic financial management information system that can track and consolidate health budgets and expenditure at all levels of government and provide information on key health markers such as gender and social inclusion and maternal and child health. An existing FMIS tool such as the Transaction Accounting and Budget Control System (TABUCS) could be updated to this purpose. The government is currently updating its tools.
- Budget absorption capacity at all layers of the government needs to be strengthened.
- Allocation of resources is inefficient. There is a need to institutionalize the performance-based grant agreement policy with a monitoring framework applicable across all government hospitals. The federal government has initiated this.
- The current level of financing for pandemic/epidemic preparedness in Nepal is much lower than what has been recommended globally. The JEE team understands that the transition from conditional to equalization grants from federal government has begun in order to allow more flexible management of health sector interventions.
- Provincial and local governments with higher revenue can allocate additional resources for health, which may not be possible for areas with lower revenue. This creates and widens disparities in health care delivery. Improved resource mobilization capacity is needed at provincial and local levels.
- National health insurance does not yet cover the all the eligible population, and more analysis is required to provide the foundations of a more sustainable approach.
- There is a need for advocacy for emergency funding for farmers' compensation when they are hit by zoonotic emergencies, a priority that should be reflected in the costed NAHPS.
- Delayed approval of annual health budgets because of delays in sending budgets to subnational units, especially in the provinces, remains a key challenge in the devolved context. As a result, there is a risk of failing to maintain financial discipline and provide timely health services. Ensuring complete implementation of annual budget calendars may help address this.
- To strengthen the public expenditure system at levels, laws on public expenditure systems, including a Financial Procedures Act and a Fiscal Responsibility Act, need to be formulated and enforced.
- Collection of revenue, risk pooling and purchasing of services need to be better integrated between different levels of government.

P2.2 Financial resources for public health emergency response – Score 4

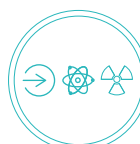
Strengths

- Budget and budget management rules on human resources, funding and procurement during emergencies are flexible, and this has been shown in real events (the 2015 earthquake and the COVID-19 pandemic response).
- In Disaster Risk Reduction and Management Act (Section 8, Sub-section 13) mentions that special plans and programmes shall be implemented to focus on at-risk, vulnerable and/or marginalized populations.
- The federal government and the provincial governments have allocated separate funds for emergency health services, as defined by the Public Health Service Directives.
- The Public Procurement Act allows immediate procurement of resources for operational readiness and responses to public health emergencies.

- The Disaster Risk Reduction and Management Act requires Disaster Management Funds to be available to central, provincial and local governments.
- If a public health emergency leads to activation of an Emergency Operation Centre (EOC), the Health Emergency Operation Centre (HEOC) coordinates the raising of the necessary internal and external resources. In a public health emergency without EOC activation, the EDCCD coordinates resource mobilization.
- Each relevant ministry or public entity has a budget allocation for responding to public health emergencies.

Challenges

- When EDP funds are not in planned budgets and are sent directly to provincial or local level this can lead to duplication.
- There is a need to track and control funding and activities to streamline preparedness and response activities in all provinces and reduce duplication.
- Local level capacity for planning, preparedness and budgeting needs strengthening. There is a need to enhance skills and train human resources at all local levels.
- Mobilizing allocated emergency funds at district level during public health emergencies can be challenging.



Recommendations for priority actions

- Support the allocation of finances to the costed National IHR Plan, ensuring involvement of all relevant sectors, by:
 - » aligning planning and budgets to ensure harmonization across all three tiers of government;
 - » securing required funding as per the costed IHR plan; and
 - » developing and implementing an IHR Budget Code.
- Institutionalize the National Health Account across all three tiers of government, and build the capacity to use it through training programmes at all three levels.
- Develop a monitoring framework to track all types of EDP financing, to improve distribution and mobilization of funds and avoid duplication.
- Increase health sector budgets and absorption rate by:
 - » undertaking a needs assessment to ensure adequate human resources at all three tiers of government; and
 - » improving public financial management capacity by building capacity for rational planning, budgeting, accounting, and implementing and reporting on activities related to the IHR and public health emergencies.
- Strengthen social security mechanisms that impact health, through:
 - » effective implementation of the Health Insurance Scheme;
 - » securing compensation funds in all relevant departments as costed in the IHR Plan; and
 - » revising the Social Security plan and undertaking public advocacy to increase uptake.

P3. IHR coordination, national IHR focal point functions and advocacy

Introduction

The effective implementation of the IHR requires multisectoral/multidisciplinary approaches through national partnerships for efficient alert and response systems. Coordination of nationwide resources, including the designation of a national IHR focal point (NFP), and adequate resources for IHR implementation and communication, is a key requisite for a functioning IHR mechanism at country level.

Target

Multisectoral/multidisciplinary approaches through national partnerships that allow efficient, alert and response systems for effective implementation of the IHR Coordinate nation-wide resources, including sustainable functioning of a National IHR Focal Point – a national centre for IHR communications which is a key obligation of the IHR – that is accessible at all times. States Parties provide WHO with contact details of National IHR Focal Points, continuously update and annually confirm them. Timely and accurate reporting of notifiable diseases, including the reporting of any events of potential public health significance according to WHO requirements and consistent relay of information to FAO and OIE. Planning and capacity development are undertaken and supported through advocacy measures to ensure high-level support for implementation of IHR.

Level of capabilities

The Epidemiology and Disease Control Division (EDCD) in the Department of Health Services (DOHS) of Nepal's Ministry of Health and Population (MOHP) has been designated as the national IHR focal point (IHR NFP). Terms of reference (TOR) between the MOHP and different ministries, departments, and divisions establish its role as a coordination mechanism to prevent, detect and respond to national public health events and risks. The TOR cover intercountry and regional information sharing, including risk assessments and WHO recommendations, and establish a liaison between the MOHP and relevant authorities at points of entry to coordinate detection and response.

The IHR NFP accesses public health events and information using EWARS and the Integrated Health Information and Management System (IHIMS). The IHR NFP has communicated several events to WHO in the past, including a cholera outbreak in 2016, human infection with avian influenza A (H5N1) in 2019, the first national case of COVID-19 in 2020 and a countrywide dengue fever outbreak in 2022. IHR State Party Self-Assessment Annual Reporting (SPAR) is done at a multisectoral annual meeting and submitted to WHO. A national Intra-Action Review (IAR) of the response to COVID-19 examined the national and subnational functional capacity of public health emergency response systems and identified practical areas for immediate remediation and continued improvement of the COVID response. An epidemic disaster simulation exercise was conducted in 2018.

Nepal has been assessing the implementation status of core IHR capacities and action plans since 2009, providing action plans to engage subnational governments and other relevant sectors. Health emergency plans are part of disaster preparedness and response plans at local and district levels and – in order to ensure a whole-of-government approach – are developed following the requirements of the Disaster Risk Reduction and Management Act 2017, the Infectious Disease Act 2020, and the National Disaster and Response Framework.



Indicators and scores

P3.1 National IHR Focal Point functions – Score 2

Strengths

- The IHR coordination mechanism is established by TOR.
- The MOHP has given the EDCD the mandate to coordinate IHR implementation across sectors.
- The functions of the IHR NFP have been implemented and are effective.
- The IHR NFP has the administrative, human, technological and financial resources necessary to perform its communications, monitoring and evaluation functions.
- The National IHR committee has functioned well and provided multisectoral coordination during real events (particularly the COVID-19 pandemic).
- The IHR NFP has consistently used the IHR mechanism to notify WHO of major public health events.

Challenges

- The COVID-19 post-pandemic transition has made it challenging to sustain the key functions of the IHR NFP in communication, public health emergency preparedness and response, and M&E.
- Capacity building of new staff to serve key functions of the IHR NFP is limited.
- There is a need for more well-trained staff.
- Nepal needs to engage more sectors in risk assessment and notification of events of potential public health significance.

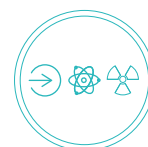
P3.2. Multisectoral coordination mechanisms – Score 3

Strengths

- A National IHR Committee is in place, with representation from 17 different ministries and agencies including those from the human, animal and environmental health and the transportation, education and security sectors.
- Nepal has implemented a whole-of-government approach to the IHR.
- Multisectoral coordination between the IHR NFP and other relevant agencies occurs through formal meetings of the National IHR Committee and Technical Working Groups, as well as informal contacts via emails, phone calls, and in-person meetings.

Challenges

- More high-level support for multisectoral coordination is required to ensure coordination across all relevant governmental sectors and adequate engagement with the private sector.
- Nepal should ensure that multisectoral coordination mechanisms, guidelines, and standard operating procedures (SOPs) are in place at national and subnational level.



P3.3. Strategic planning for IHR, preparedness or health security – Score 1

Strengths

- Nepal assessed the national implementation status of core capacities and action plans for the IHR (2005) in 2009.
- Orientation on IHR core capacities has been provided at national and subnational levels, along with advocacy on POE, rapid response teams (RRT) and the national surveillance system.

Challenges

- A national health security plan should be designed and developed with the participation of multisectoral stakeholders.
- An advocacy strategy is crucial in order to sensitize all relevant stakeholders on their roles and responsibilities in IHR implementation.

Recommendations for priority actions

- Prepare and develop a consolidated multisectoral National Plan for Health Security that is prioritized, costed and implemented, with clear roles and responsibilities for all relevant stakeholders, and an appropriate monitoring and evaluation framework.
- Develop a national standard operating procedure (SOP) for coordination and communication between the IHR National Focal Point and the relevant bodies within national and subnational governments for implementation of the IHR.
- Establish technical area, sectoral and subnational focal points for multisectoral coordination and implementation of the IHR (2005).
- Intensify collaboration among decision-makers and relevant stakeholders at all levels through regular advocacy, coordination, and monitoring and evaluation to strengthen IHR capacities.
- Establish a structural unit under the IHR NFP for coordinating IHR-related activities.

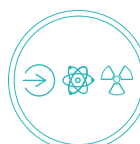
P4. Antimicrobial resistance (AMR)



Introduction

Bacteria and other microbes evolve in response to their environment and inevitably develop mechanisms to resist being killed by antimicrobial agents. For many decades, the problem was manageable as the growth of resistance was slow and the pharmaceutical industry continued to create new antibiotics.

Over the past decade, however, this problem has become a crisis. Antimicrobial resistance is evolving at an alarming rate and is outpacing the development of new countermeasures capable of thwarting infections in humans. This situation threatens patient care, economic growth, public health, agriculture, economic security and national security.



Target

A functional system in place for the national response to combat antimicrobial resistance (AMR) with a One-Health approach, including:

- Multisectoral work spanning human, animal, crops, food safety and environmental aspects. This comprises developing and implementing a national action plan to combat AMR, consistent with the Global Action Plan (GAP) on AMR.
- Surveillance capacity for AMR and antimicrobial use at the national level, following and using internationally agreed systems such as the WHO Global Antimicrobial Resistance Surveillance System (GLASS) and the OIE global database on use of antimicrobial agents in animals.
- Prevention of AMR in health care facilities, food production and the community, through infection prevention and control measures.
- Ensuring appropriate use of antimicrobials, including assuring quality of available medicines, conservation of existing treatments and access to appropriate antimicrobials when needed, while reducing inappropriate use.

Level of capabilities

NB The description of Nepal's AMR capacity is truly cross-cutting and should be viewed in context of other related technical areas and priority actions, including but not limited to national laboratory systems, infection prevention and control (IPC), zoonotic diseases, food safety and surveillance.

The government of Nepal has undertaken several measures to contain the challenges of AMR. The National Health Policy of Nepal prioritizes AMR as an important public health issue and highlights the need to develop a national action plan (NAP) to reduce AMR and regulate and control antibiotic use through collaborative, multisectoral action. A multisectoral, costed national AMR action plan (the NAP-AMR) has therefore been developed, including an M&E framework, and at the time of the JEE was awaiting Cabinet endorsement to enable its comprehensive implementation. The multisectoral coordination mechanism is functional, with a Multisectoral AMR Steering Committee that has clear terms of reference and holds regular meetings attended by secretaries and representatives from various ministries, the DOHS, the drug administration, livestock services and other bodies. In addition, there is a National Technical Working Committee (NTWC) that includes the chairpersons of various technical working groups (TWGs) and other representatives from various sectors. The TWGs cover the five strategic priorities of the NAP, which are aligned with the Global AMR action plan.

Nepal has a standardized national AMR surveillance system that collects data on common pathogens in hospitalized and community patients in 26 sites; an established network of surveillance sites; a designated national reference laboratory for AMR; and a National Coordinating Centre producing AMR reports. In the animal health sector, the CVL acts as the reference laboratory and there is sufficient laboratory capacity at seven surveillance sites to perform routine cultural isolation, identification, and antimicrobial resistance testing (AST) by disc diffusion from clinical specimens. Active farm-based surveillance for AMR pathogens in livestock has been ongoing since 2011, and at the time of the JEE a pilot project was being conducted in 300 farms with active surveillance in poultry for organisms including *E.coli*, enterococcus and salmonella.

The AMR surveillance protocol in human health has identified novel and emerging resistant phenotypes among selected pathogens that should be reported to the national reference lab for confirmation (including multi drug resistant organisms/MDRO). There is no consistent containment strategy at health care facilities for MDRO, and the approach varies depending on the resources available at the facility. These aspects are incorporated into National IPC guidelines which had been finalized and were in the process of endorsement at the time of the JEE (see also R4., Infection Prevention and Control).

Antibiotics are prescription drugs in Nepal as per the Drug Act 1978, but in reality they are freely available over the counter for human or animal use. National policy and regulations promoting appropriate antimicrobial use/ antimicrobial stewardship activities are developed for community and health care settings, but there is no routine system in place to review the appropriateness of prescribed antibiotics.

Indicators and scores

P4.1. Multisectoral coordination on AMR – Score 3

Strengths

- The NAP-AMR has been developed and costed using the One Health approach and with active One Health representation. It includes an M&E framework.
- A multisectoral steering committee, the NTWC on AMR and sectoral TWGs on AMR, antimicrobial use (AMU) and antimicrobial consumption (AMC) have been formed and are functional, with stakeholders from the human and animal health, food and environment sectors.
- Though the NAP-AMR is yet to be endorsed, activities across all five pillars of the NAP-AMR are already being implemented. At present some government funds are used for training and to strengthen labs, with additional support from EDPs such as WHO.
- Information, education and communication materials have been developed for awareness raising, and the World Antimicrobial Awareness Week is celebrated through various platforms.
- Nepal participates in the annual Tracking AMR Country Self-Assessment Survey.

Challenges

- At the time of the JEE the Multisectoral AMR Steering Committee had approved the NAP-AMR and Cabinet endorsement was in process. The main barrier to implementation was the pending endorsement and approval of the budget.
- The national AMR Secretariat will need to be strengthened to enable effective M&E of the implementation of the NAP.

P4.2. Surveillance of AMR – Score 4

Strengths

- A national AMR surveillance programme is in place with a well-defined sentinel network, TORs and priority organisms for surveillance, and includes active surveillance in animal health (poultry).
- Protocols for laboratory-based AMR surveillance are in place and disseminated at sites in both the human and animal health sectors.
- Surveillance site laboratories participate in national external quality assurance programme (NEQAS) programmes and reference labs participate in international external quality assurance (EQA).
- Reference laboratories for AMR are well equipped for identification of antimicrobial resistance and AST, using advanced equipment like MALDI-TOF (matrix assisted laser desorption ionization – time of flight mass spectrometry) and VITEK-2.
- Human AMR data is shared nationally and locally through newsletters and worldwide through the global antimicrobial resistance surveillance system (GLASS).
- Personnel are trained in laboratory-based AMR surveillance and in-country capacity building for operational research on AMR/AMU.
- The AMR ESBL Tricycle project is implemented reflecting the One Health approach.

Challenges

- It is difficult to include private sector laboratories in AMR surveillance initiatives.
- There is a need for AMR surveillance in the environment sector.
- Laboratory testing and data quality require improvement and the AMR biorepository system needs to be strengthened.
- To reach a level 5 score on indicator 4.2 there is a need to improve AMR and AMU/AMC data sharing and management within and between sectors for shared data analysis, interpretation and reporting, and improve the use of AMR data for antimicrobial stewardship, evidence-based prescribing and policy making, and AMR alerts.
- There is a need to improve isolate sharing from sites to national reference labs for molecular confirmation of AMR through sequencing.
- Access to diagnostic microbiology laboratory facilities is limited at peripheral level.
- There is frequent turnover of trained staff and limited resources.

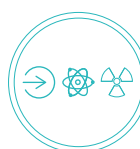
P4.3. Prevention of multidrug resistant organisms (MDRO) – Score 3

Strengths

- IPC guidelines and a learning resource package have been developed, and IPC committees have been formed in some hospitals.
- Healthcare staff receive induction and regular training on IPC.
- The AMR surveillance protocol has identified AMR phenotypes of concern to be reported for confirmation and inclusion in the biorepository.
- AMR surveillance sites have been trained and are able to detect MDRO phenotypes of concern.

Challenges

- The National IPC Guideline has not been endorsed, and this is required for its implementation.
- There is a need to establish a system for surveillance and reporting of health care acquired infections (HCAI) and to link it to existing AMR surveillance.
- Linking laboratory data with patient clinical and demographic data is a challenge. Integrated data software is needed to connect laboratory information management systems (LIMS) and hospital information systems.



- Laboratory capacity for AMR surveillance sites needs to be strengthened to detect MDR phenotypes of concern.
- IPC committees in hospitals have limited functions, limited resources and limited technical capacity (see also R4., Infection Prevention and Control).

P4.4. Optimal use of antimicrobial medicines in human health – Score 3

Strengths

- Guiding documents are in place to promote rational prescription (e.g. the Drug Policy and the Drug Act, the National Antibiotic Treatment Protocol and the Essential Medicines List (EML)).
- The National EML has recently been revised and incorporates AWaRe classification (WHO access, watch, reserve, classification of antibiotics for evaluation and monitoring of use).
- The National Antimicrobial Treatment Guidelines have been revised considering current national AMR trends.
- A hospital based AMU survey has been initiated in few sites, adopting the WHO tool for AMU point prevalence surveys, and AMU data is used to raise awareness among prescribers.
- Quantification and consumption of pharmaceuticals is done by the Department of Drug Administration (DDA), focusing on antimicrobials.
- Protocols and tools for AMC surveillance have been developed, and AMC data is reported to GLASS.
- Distribution pathways have been mapped for antimicrobials (also in humans).
- Hospital local antibiograms are being developed and lab-clinic interface workshops are held to promote integrated AMR stewardship.

Challenges

- Hospital AMU surveillance needs to be expanded and embedded in routine hospital programmes. AMU surveys should be conducted in communities.
- There is a need to raise awareness across all sectors on the rational use of antimicrobials.
- The hospital AMS programme needs to be strengthened, requiring the building of technical capacity in settings with high staff turnover, and improved enforcement of related guidelines and policies.
- Stronger regulation and monitoring of the import and sales of antimicrobials is needed, along with enforcement of the prescription-only use of antimicrobials (considering challenges of limited access to prescribers in peripheral areas).

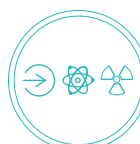
P4.5. Optimal use of antimicrobial medicines in animal health and agriculture – Score 2

Strengths

- National AMC data is collected from manufacturers, importers, and the customs department. Quantitative data is reported to the World Organization for Animal Health (WOAH).
- AMU data is collected at field level in poultry from different geographic areas.
- Protocols and tools have been developed for AMU surveys in animals.
- A livestock antibiotics treatment guideline has been drafted.
- Distribution pathways of antibiotics in animals have been mapped.
- Farmers and practitioners have received awareness training on the rational use of antimicrobials.

Challenges

- Unregistered/sub-standard antimicrobials are available on the market. Farmers have direct access to antimicrobials without prescriptions, and the Drug Act does not take the veterinary sector into account. All this requires strengthening of regulation and monitoring of the import and sales of antimicrobials.
- An established formal mechanism is needed to collect AMU data from manufacturers and importers.
- The AMS programme in veterinary settings needs to be strengthened.
- There is a need to expand existing farm-based surveys to collect AMU data at end-user level, and to strengthen the database to collect and store AMU data.
- Technical capacity and budgets are limited.
- Farmers are hesitant to share AMU data.



Recommendations for priority actions

- Endorse the costed Multisectoral National Action Plan for AMR, and ensure adequate, sustainable allocation of resources for its implementation, monitoring and evaluation, with oversight from the Multisectoral Steering Committee on AMR.
- Strengthen laboratory capacity in a stepwise manner, at all tiers and across all sectors, for quality and timely AMR diagnosis and MDRO detection, including by training personnel and ensuring availability of sufficient human resources, infrastructure, equipment and consumables.
- Expand AMR surveillance sites up to Provincial level across all sectors, including tertiary care, academic and research institutions, and ensuring geographical representation.
- Reinforce the optimal use of antimicrobials in human health and animal health through:
 - » strengthening the national regulatory system and the capacity to monitor and enforce rational prescription, consumption, quality and sales of antimicrobials in the human and animal health sectors;
 - » enhancing public awareness of the threat of AMR and appropriate use of antimicrobials across all sectors through the education system and media campaigns in collaboration with stakeholders including but not limited to those in civil society and the private sector;
 - » updating the Drug Act, incorporating the full scope of the animal health and agriculture sector; and
 - » updating the Feed Act to address the use of antimicrobials in animal feed.
- » Expand (in a stepwise manner) the use of multidisciplinary teams/Antimicrobial Stewardship Programmes (AMSP) to improve coordinated AMR management in healthcare facilities, including by training personnel and ensuring the availability of sufficient human resources for IPC, laboratory diagnostics, AMR/HAI surveillance and AMSP.
- » Develop, adopt and implement good husbandry practices, biosecurity guidelines and SOPs to optimize the use of antimicrobials in livestock farms.

P5. Zoonotic disease

Introduction

Zoonotic diseases are communicable diseases that can spread between animals and humans. These diseases are caused by viruses, bacteria, parasites, and fungi carried by animals, insects or inanimate vectors that aid in its transmission. Approximately 75% of recently emerging infectious diseases affecting humans are of animal origin; and approximately 60% of all human pathogens are zoonotic.

Target

Functional multi-sectoral, multidisciplinary mechanisms, policies, systems, and practices are in place to minimize the transmission of zoonotic diseases from animals to human populations.

Level of capabilities

More than 80% of Nepal's population is engaged in agriculture. The country has one of the highest livestock-to-humans ratios in Asia, with 5.8 livestock per household, making it highly vulnerable to zoonoses. Nepal is also on two routes for migratory birds known to be carriers of the zoonotic disease, posing additional risk to human and animal populations. Several zoonotic diseases – including avian influenza, rabies, brucellosis and zoonotic tuberculosis (TB) are frequently observed in animals, and occasionally in humans.

The DOHS, the Department of Livestock Services (DLS), and the Department of National Parks and Wildlife Conservation are the main competent authorities responsible for minimizing transmission of zoonotic diseases from animals to human populations.

Recognizing a need for multisectoral, multidisciplinary, cross-agency collaboration to address these and other risks to human health, the government of Nepal developed and adopted a One Health Strategy in 2019. This strategy covers the actions of human, animal and environmental health-related agencies.

Following the implementation of the One Health Strategy, relevant competent authorities developed a list of prioritized zoonotic diseases comprising influenza, rabies, coronavirus, leptospirosis, brucellosis, salmonellosis, leishmaniasis, zoonotic TB, cestode and toxoplasmosis. The prioritization was done in 2021 by a multisectoral expert group with support from WHO Nepal, in a workshop using a disease prioritization tool that was a hybrid of WHO's Setting Priorities in Communicable Disease Surveillance tool and CDC's One Health Tool for Prioritizing Zoonoses.

Nepal has conducted joint responses to outbreaks (including outbreaks of rabies and avian influenza) involving both the animal and public health sectors, but jointly-developed and adopted operational mechanisms – which currently do not exist – would ensure efficient and timely responses at all administrative levels.

Because prevention of transmission of zoonotic diseases from animals to humans requires strong performance by the veterinary services, further effort to strengthen capacity in that sector is recommended.

The DLS conducts active surveillance for zoonotic influenza in poultry and pigs; periodic surveys of brucellosis, toxoplasmosis, leptospirosis and TB; and some syndromic surveillance. But there are no structured official surveillance programmes for the relevant zoonotic diseases other than for avian influenza.

Development and implementation of disease control programmes is hampered by the lack of an animal identification and registration system, lack of farmers' compensation schemes for diseases other than highly pathogenic avian influenza (HPAI), and other challenges.

Nepal is engaged in the WOAHP Performance of Veterinary Services (PVS) Pathway, having had a PVS evaluation in 2008 and a PVS gap analysis in 2011. At the time of the JEE Nepal was preparing a request to WOAHP for a PVS evaluation follow-up mission, which the DLS sees as a prerequisite for the IHR-PVS National Bridging Workshop that would follow.

Indicators and scores

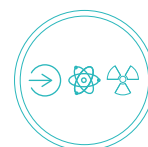
P5.1. Surveillance of zoonotic diseases – Score 2

Strengths

- The One Health Strategy 2019 was endorsed by the government to provide a general framework for collaboration and coordination of the public, animal and environmental health sectors and institutions.
- Nepal has a prioritized list of the zoonotic diseases of greatest national public health concern. Prioritisation was done by multisectoral experts with support from WHO Nepal.
- Following the prioritization of zoonotic diseases, a national capacity assessment for prioritized zoonotic diseases was conducted in the human health sector.
- Nepal has the capacity to diagnose the prioritized zoonotic diseases.
- The Bird Flu Control Regulation 2022 was promulgated by the Government of Nepal to control and contain avian influenza, and was developed by representatives from all relevant sectors.
- A National Rabies Control Strategy was at an advanced stage of development at the time of the JEE.
- The national network of veterinary laboratories was used for COVID-19 PCR diagnosis in humans.
- The DLS has an active surveillance programme for avian influenza and does periodic surveys of brucellosis, toxoplasmosis, leptospirosis and TB.
- A surveillance guideline for SARS-COV2 in companion animals is in the process of formal approval by the government.
- The Department of National Parks and Wildlife Conservation has a wildlife hospital and laboratory.
- There is a human surveillance and reporting system in place through the influenza-like illness (ILI) and severe acute respiratory illness (SARI) systems in EWARS.

Challenges

- Data sharing mechanisms between federal, provincial and local governments are not well defined.
- There is no functional mechanism to coordinate and share information between relevant stakeholders for any priority zoonotic diseases.
- There is no joint risk assessment mechanism when zoonotic disease occurs.
- There is no system/mechanism by which surveillance activities are planned and implemented concurrently by the animal and human health sectors.
- There is no procedure for sharing laboratory reports or alerts between public health and animal health laboratories.
- Nepal has legal provisions for compensating farmers when animals are culled because of disease control measures, but there were technical difficulties in providing timely compensation for poultry culled during a recent outbreak of avian influenza.
- There is a need to build the capacity of the wildlife sector to identify and report disease.
- Further engagement of all tiers of government and communities is needed to strengthen disease surveillance.



P5.2. Responding to zoonotic diseases – Score 2

Strengths

- A One Health Action Plan is developed and was going through the endorsement procedure at the time of the JEE.
- Despite the lack of formal guidelines and operational mechanisms, joint outbreak investigations have been done in outbreaks of rabies and avian influenza.
- Avian influenza contingency plans have been developed, and simulation exercises have been performed.
- Rapid response team training has been done.

Challenges

- There are no operational mechanisms in place for joint responses to disease outbreaks, so there is no defined chain of command, clear procedures or clarified roles and responsibilities for stakeholders in human and animal (including wildlife) health.
- There are no contingency plans for relevant zoonotic diseases other than avian influenza.
- There are no guidelines for joint outbreak investigations.
- There are no mechanisms to increase data sharing between sectors and different tiers of government.
- There is a need for enhanced collaboration between public health and veterinary laboratories to share findings on zoonoses.

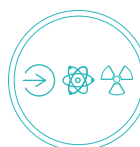
P5.3. Sanitary animal production practices – Score 2

Strengths

- A National Animal Health Policy was adopted in 2022.
- A Biosecurity Manual for Commercial Poultry Production is in place and implemented, mostly in commercial poultry farms.
- Nepal has a regulatory framework for the inspection of livestock and poultry farms.

Challenges

- Good practices and guidelines are not stringently implemented.
- Nepal has no animal identification and registration system, no farm register apart from for commercial poultry farms, and no capacity for efficient tracing of animals or animal products.
- Guidelines and animal farming policies for different species have not been developed.
- Nepal has insufficient logistic and human resource capacity at provincial and local levels to implement current and future planned regulatory activities.
- While a new Animal Infectious Disease Control Act was being drafted at the time of the JEE, further effort needs to be put into completing and facilitating it, including defining the procedures by which it will be adopted when complete.



Recommendations for priority actions

- Following the One-Health Strategy, 2019:
 - » endorse the One Health Action Plan;
 - » develop and implement a joint risk-based surveillance plan based on the One Health concept, and strengthen the capacity of all relevant stakeholders to conduct regular surveillance and response;
 - » develop contingency plans and SOPs for prioritized zoonotic diseases and perform related simulation exercises; and
 - » develop multisectoral operational mechanisms to share information and coordinate responses to outbreaks of endemic, emerging or re-emerging zoonotic diseases by the human health, animal health and environmental sectors.
- Develop an animal identification, registration and traceability system for animals and products of animal origin that enables rapid response to outbreaks of endemic, emerging or re-emerging zoonotic diseases.
- Develop and adopt legal instruments to support all the above-mentioned activities.

P6. Food safety

Introduction

Food- and water-borne diarrhoeal diseases are leading causes of illness and death, particularly in less developed countries. The rapid globalization of food production and trade has increased the potential likelihood of international incidents involving contaminated food. The identification of the source of an outbreak and its containment is critical for control. Risk management capacity with regard to control throughout the food chain continuum must be developed. If epidemiological analysis identifies food as the source of an event, based on a risk assessment, suitable risk management options that ensure the prevention of human cases (or further cases) need to be put in place.

Target

A functional system is in place for surveillance and response capacity of States Parties for foodborne disease and food contamination risks or events with effective communication and collaboration among the sectors responsible for food safety.

Level of capabilities

Nepal has a strong food-related legal framework and a good network of 43 relevant offices (including one department, 22 divisions, eight provincial office and 12 food import and export offices).

Nepal's food safety laboratories are internationally accredited at department level.

Some younger staff are highly educated, often with degrees from international institutions.

Indicator based surveillance (IBS) is well established from a human health perspective, although it is not specifically designed to monitor and detect foodborne events. Event-based surveillance (EBS) is not systematically established, and is often conducted on an ad hoc basis. Laboratory capacity exists for the detection of only a limited number of relevant diseases (such as cholera, for example), and does not have nationwide coverage.

One major gap is the lack of a list of priority foodborne diseases.

Budgets for different activities are limited, and particularly so for laboratory operations, inspection facilities and awareness raising.

Coordination, communication and collaboration between stakeholders needs to be strengthened.

Indicators and scores

P6.1. Surveillance of foodborne diseases and contamination – Score 2

Strengths

- Indicator-based surveillance has been established for certain foodborne diseases through EWARS.
- Rapid Response Teams are formed under the EDCC and the Department of Food Technology and Quality Control (DFTQC) for fast responses to outbreaks or epidemics at any level.
- Food industry and market inspection and monitoring are done under Quality Control Programmes operated through the DFTQC at central level (through eight offices of the FTQCO) and through 22 divisional offices of the Food Technology and Quality Control Divisional Offices (FTQCDO).

- Surveillance is done on human samples by the EDCCD, and on food samples by the DFTQC.
- Incident-based surveillance under the MOHP includes weekly reporting on some foodborne diseases (such as cholera and acute gastroenteritis).
- There is strong collaboration between the DoHS and the MOHP in outbreaks and investigations of foodborne disease/incidents.
- Timely meetings and press releases are held during outbreaks and/or emergencies.
- Annual inspection reports are published on the monitoring and surveillance of processed drinking water, dairy and meat products, hotel/restaurant canteens and street food.
- The DFTQC has its own laboratory network, with a strong central laboratory and networks for testing food samples in eight labs across seven provinces.
- The DFTQC labs process food and feed samples, the National Public Health Laboratory (NPHL) processes human samples, and the Central Veterinary Laboratory (CVL) processes animal samples.
- There is regular monitoring and surveillance of microbiological and chemical contaminants in food and feed from markets, industries and at border points.
- The National Food and Feed Reference Laboratory at the DFTQC is ISO 17025:2017 accredited, and the FTQCO laboratory at Biratnagar had recently completed assessment for accreditation at the time of the JEE.
- The NPHL is also ISO 15189:2012 accredited.
- There is regular coordination between the DFTQC and the NPHL in reporting AMR surveillance.

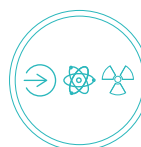
Challenges

- It has been challenging to implement an evidence-based surveillance/alert and rapid response system that detects signals from all over Nepal.
- There is a need for a common comprehensive disease reporting system that includes human, animal and foodborne diseases.
- Stronger collaboration is needed under the One Health approach, including between the food, animal health, human health and environmental sectors.
- There is a need to update legislation, directives, guidelines and standards as per the latest food safety trends and practices.
- Members of RRTs need regular training on the latest evidence and investigation procedures.
- There is a need for more simulation exercises on coordinated responses to foodborne diseases.
- There is a lack of planning and financial resources for simulation exercises.
- Risk assessment is challenging for a range of reasons – for example, a general lack of data.
- Nepal lacks national guidelines and SOPs on event-based surveillance/alert and rapid response systems.
- Disease reporting mechanisms vary across sectors and agencies.
- There is no clear mechanism for coordination between various sectors under the MOHP.
- Nepal has faced practical challenges in collaboration and implementing the One Health approach.

P6.2. Response and management of food safety emergencies – Score 1

Strengths

- Nepal has provisions for deploying RRTs from the DOHS and the DFTQC as needed to investigate and respond to outbreaks and epidemics, as was done in recent cholera outbreaks in the Kathmandu valley.
- Regulatory procedures are available for food inspectors to take actions as needed.



- The Director General of the DFTQC is the focal point for international information-sharing networks including INFOSAN, CODEX, etc.
- Budgets are allocated for emergency activities in the annual workplans of the DOHS and the DFTQC.
- There is a mechanism for rapid, regular handling of complaints from consumers regarding food safety and quality (via phone calls, written applications, social media, etc.).
- Reports of major outbreaks and investigations are published as press notes and in official bulletins.
- Nepal has regular contact with INFOSAN and CODEX, and communicates on SPS issues through a sanitary and phytosanitary (SPS) enquiry and response point.

Challenges

- A list of priority foodborne diseases is needed, along with case definitions and investigation and management guidelines and SOPs.
- There is a need to enhance Nepal's networking with INFOSAN and related functions.
- A food safety emergency response plan is needed.
- Memoranda of understanding (MOUs) and SOPs are needed for multiagency communication and coordination.
- Although indicator-based surveillance and EWARS capture some foodborne diseases, there is a need for an event-based surveillance/alert and response mechanism to detect and respond to all signals/events.
- There is a need for more human resources and SOPs on the INFOSAN working mechanism; more training to capacitate and enhance food safety efforts; and more networking with provincial and local authorities.
- There is no clear mechanism for coordination between various departments of the MOHP and the Ministry of Agriculture and Livestock Development (MOALD) on issues related to food safety.

Recommendations for priority actions

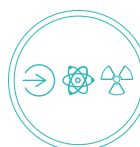
- Develop a list of priority foodborne diseases.
- Develop a multisectoral disease surveillance system in feed and food that includes case definitions; protocols for source investigations; and mechanisms for response and management of food safety emergencies.
- Map existing laboratory resources at national, provincial and local level. Based on the results, develop a plan for strengthening and/or maximizing resources to enhance the capacity and competencies of laboratories, with particular focus on emerging issues of food safety (e.g. pesticide residues, veterinary drug residues, chemical and microbiological contaminants, trans-fats, etc.).
- Ensure that the national CODEX and INFOSAN Secretariats coordinate with national, provincial and local counterparts. Establish the necessary plans and SOPs with involvement of all relevant sectors and full consideration of the IHR (2005).

P7. Biosafety and biosecurity

Introduction

It is vital to work with pathogens in the laboratory to ensure that the global community possesses a robust set of tools – such as drugs, diagnostics, and vaccines – to counter the ever-evolving threat of infectious diseases.

Research with infectious agents is critical for the development and availability of public health and medical tools that are needed to detect, diagnose, recognize and respond to outbreaks of infectious diseases of both natural and deliberate origin. At the same time, the expansion of infrastructure and resources dedicated to work with infectious agents have raised concerns regarding the need to ensure proper biosafety and biosecurity to protect researchers and the community. Biosecurity is important in order to secure infectious agents against those who would deliberately misuse them to harm people, animals, plants or the environment.



Target

A whole-of-government multisectoral national biosafety and biosecurity system with high-consequence biological agents identified, held, secured and monitored in a minimal number of facilities according to best practices, biological risk management training and educational outreach conducted to promote a shared culture of responsibility, reduce dual-use risks, mitigate biological proliferation and deliberate use threats, and ensure safe transfer of biological agents; and country-specific biosafety and biosecurity legislation, laboratory licensing and pathogen control measures in place as appropriate.

Level of capabilities

Nepal acknowledges the essential importance of developing a legislative and regulatory framework to ensure commitment to biosafety and biosecurity, allocation of adequate resources, and establishment and maintenance of a structured, controlled national mechanism to handle, store and communicate about high consequence pathogens. Moreover, advocacy to ensure that biosecurity measures are seriously considered and addressed is essential. Nepal's laboratory system consists of public health and veterinary laboratories providing diagnostic services and others involved in surveillance, research, and regulatory activities. Based on information provided by the NPHL and the CVL, this network demonstrates a high degree of awareness of the importance of biosafety and biosecurity practices

BSL2(+) laboratories in Nepal are well equipped, with negative pressure rooms, Class II biosafety cabinets, autoclave/disinfection sterilization systems and more.

Nepal has a dedicated inventory and biorepository system for avian influenza, rabies, AMR surveillance, COVID-19 and polio samples, and this system could be implemented for other high consequence pathogens. Regarding polio, besides an updated inventory record of where samples are stored Nepal has also developed the "National Task Force for Laboratory Containment of Polio," a guideline document that indicates all the required actions and procedures to contain polio in the country.

The biorepository system consists of -20/-80 °C freezers with access control and CCTV camera security systems, important biosecurity measures that ensure several levels of control of access to samples.

To limit the culturing of highly pathogenic agents and the associated risks, Nepal's laboratories can use antigen and PCR tests for diagnosis, thus avoiding the culturing of agents such as rabies, brucella, avian influenza, anthrax, monkeypox and others. The NPHL cultures influenza: this practice was stopped during COVID, but which had been recently re-initiated at the time of the JEE.

Strong adherence to PPE requirements based on international guidelines and a comprehensive set of SOPs shows that many of the requirements for safe laboratory working environments are already in place. In terms of occupational safety, relevant laboratory workers undergo specific pre-exposure prophylaxis. Examples demonstrated by the CVL included prophylaxis for workers in rabies diagnosis and vaccine production.

An exemplary approach to guaranteeing safe disposal of laboratory samples and reducing environmental impact is underpinned by a well-structured waste management unit and a range of supporting documents and legislation, including the National Health Care Waste Management Standards and Operating Procedures 2020 (a comprehensive document developed on the basis of the Health Care Waste Management Guidelines 2014, the Public Health Service Act 2018, the Public Health Service Regulation 2020 and the National Health Policy 2019).

The NPHL has the authority to license other laboratories in the country, and assessment of biosafety and biosecurity is one of the core components of the licensing process. In addition, the NPHL has developed a Training Manual on Biosafety and Biosecurity for Laboratory Professionals (2021), which has been used not only to train laboratory personnel, but also for train-the-trainers programmes.

Nepal has proven its strong aspiration to intersectoral cooperation. The potential growth in capacity through One Health-based synergies between the animal and human health sectors and institutions can only further benefit biosafety and biosecurity in Nepal.

Indicators and scores

P7.1. Whole-of-government biosafety and biosecurity system in place for all sectors (including human, animal and agriculture facilities) – Score 1

Strengths

- Nepal is successfully and correctly operating BSL2 laboratories.
- Guidelines and SOPs are in place for the transport of biological specimens, waste management, etc.
- A new waste management unit is operating in the NPHL.
- Nepal has a national task force under the NPHL for laboratory containment of polio.
- A biosafety and biosecurity training manual and training exercises are available to laboratory personnel.
- Post-exposure prophylaxis (PEP) guidance is available (the HIV-PEP Guideline).
- Nepal shows strong adherence to PPE requirements (based on global guidance) and adequate PPE is available for staff who need it.
- The licensing of healthcare laboratories addresses biosafety and biosecurity as a core component.
- Safe disposal of laboratory generated waste is practiced in most laboratories, autoclaving and/or disinfecting infectious waste prior to disposal.
- Nepal has an updated inventory of stored infectious or potentially poliovirus-containing material.
- The CVL, the NPHL and some provincial laboratories have a dedicated biorepository unit with -20/-80 °C freezers with access control and independent energy supplies.

- Pre-exposure prophylaxis is available for personnel working in rabies diagnosis and vaccine production.

Areas that need strengthening and challenges

- There is no national biosafety and biosecurity system or regulatory framework.
- There is a general underestimation of the importance of biosecurity measures and an insufficient allocation of resources to implement them.
- Nepal requires no registration for research laboratories, so there is no information-sharing on what high consequence pathogens are present in the country and/or where they might be stored.

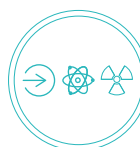
P7.2. Biosafety and biosecurity training and practices in all relevant sectors (including human, animal and agriculture) – Score 1

Strengths and best practices

- Biosafety and biosecurity training modules and training courses, including training-of-trainers courses, are in place and conducted regularly.
- SOPs are in place for a biorepository specifically for AMR surveillance and polio containment.
- The NPHL maintains an inventoried repository of AMR isolates, COVID-19 samples and samples collected during outbreaks (the latter is done on an ad hoc basis, as needed – for example, it was done during a recent dengue outbreak).

Areas that need strengthening and challenges

- The Biosafety Manual should be adapted to the WHO Laboratory Biosafety Manual 4th edition, tailoring the latter to the country's needs.
- There is a need to build up the cadre of national biosafety and biosecurity trainers through a training-of-trainers programme.
- Nepal would benefit from developing and implementing guidelines for a pathogen-specific biorepository system, and training relevant staff in their application.
- There are insufficient resources to provide high quality training, certification and competence assessment for all the staff who need them.
- Nepal intends to sign a new MOU with accredited foreign institutions for technical capacity enhancement in biosafety, but this has not yet been done.



Recommendations for priority actions

- Develop policy, legislation, a regulatory framework and a strategic plan to enforce a national biosafety and biosecurity system, and establish a multisectoral Biosafety and Biosecurity Committee at ministerial level.
- Develop a list of priority high threat pathogens, working from the One Health perspective, and regularly update an inventory of these pathogens and the biological materials stored and handled in different laboratories and institutions (including academic and research labs).
- Develop a licensing mechanism and guidelines for all facilities storing specific high-consequence pathogens, limiting the number of such facilities to a minimum.
- Conduct a national training needs assessment and develop training programmes based on the results. Review and adapt the existing Biosafety and Biosecurity Training Manual using the One Health approach and incorporating risk-based assessments as an integral part of training.
- Develop national capacity by allocating the resources necessary for calibration and maintenance of biosafety and biosecurity equipment.

P8. Immunization

Introduction

Immunizations are estimated to prevent more than two million deaths a year globally. Immunization is one of the most successful global health interventions and cost-effective ways to save lives and prevent disease. Measles immunization is emphasized because it is widely recognized as a proxy indicator for overall immunization against vaccine preventable diseases. Countries will also identify and target immunization to populations at risk of other epidemic-prone vaccine preventable diseases of national importance (e.g. cholera, Japanese encephalitis, meningococcal disease, typhoid and yellow fever). Diseases that are transferable from cattle to humans, such as anthrax and rabies, are also included.

Target

A national vaccine delivery system – with nationwide reach, effective distribution, easy access for marginalized populations, adequate cold chain and ongoing quality control – that is able to respond to new disease threats.

Level of capabilities

Nepal has strong child health and immunization infrastructure from central to ward level, with a minimum of one health post and 3-5 outreach sites per ward (depending on the size of the ward's population). High political commitment and multisectoral collaboration have led to the achievement of Millennium Development Goal number 4 (reducing the under-five mortality rate by two thirds by 2015) and a range of other progressive improvements of Nepal's capacity to achieve the SDG goals and IHR core capacities.

The National Immunization Programme (NIP) is a number one priority programme for the Nepalese government. It started in 1979 with BCG (Bacillus Calmette–Guérin) vaccine for TB and diphtheria-pertussis-tetanus vaccine (DPT) and was expanded across the country in 1988 with the full primary series of vaccines: BCG, DPT, polio and measles. Aligning with global and regional vaccine action plans, Nepal introduced several new vaccines into the programme over time, and 13 antigens are currently available: BCG, pentavalent (diphtheria, pertussis, tetanus, hepatitis B and haemophilus influenza), oral polio vaccine, fractional inactivated polio vaccine (fIPV), rotavirus, pneumococcal conjugate vaccine, measles rubella vaccine (MR), Japanese encephalitis, typhoid conjugate vaccine (TCV) and tetanus and diphtheria vaccine.

Since the global eradication of smallpox, Nepal has demonstrated high quality immunization services by engaging communities in the programme, and has achieved several milestones. Measles and neonatal tetanus (MNT) were eliminated in 2005 and the country has remained MNT-free to date; polio free certification was achieved in 2014; rubella/congenital rubella syndrome (CRS) control certification was achieved in 2018; and Hep-B control certification was achieved in 2019.

Nepal was the first country in WHO's Southeast Asian Region to develop an immunization act. This was followed in 2018 by an immunization regulation. Development of the National Immunization Strategy, guided by the Immunization Agenda 2030, was underway at the time of the JEE. Vaccine uptake in Nepal is very high, both for routine immunization and for COVID-19 vaccination.

Full Immunization Declaration, an innovative approach, was adopted in 2012, and as of October 2022 more than 90% of districts (70 out of 77 districts) have been declared fully immunized. 90% of the country's 12-month-old population has received at least one dose of measles-containing vaccine, and plans and capacities are in place to achieve 95% coverage by 2030. More than 90% of all intermediate (district/province) units are covered: vaccine uptake by Nepali nationals is very high in routine immunization. There is high national coverage of MCV vaccine: administrative coverage in 2021/22 of MR 1st and 2nd doses were 95% and 93% respectively, and survey coverage following an MR campaign in 2021 reported routine MR 1st and 2nd dose coverages as 99.4% and 96.3% respectively.

To identify and vaccinate zero-dose and under-immunized children, several innovative strategies have been endorsed by the government: the age for vaccinating missed children has been increased from two years to five, and the first month of the Nepali calendar is celebrated as "immunization month," in which a "Search and Immunize" strategy is conducted. Mobile immunization clinics, an approach to vaccinating children in hard-to-reach areas, are conducted 3-4 times in a year, based on need. These innovations may be replicated in other countries that are looking for suitable strategies to address children missed in routine vaccination. More than 52 000 female community health volunteers (unpaid women in communities who are engaged to bring target children to vaccination sites) add strength to the programme.

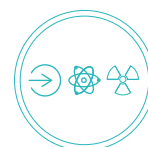
Cold chain capacity has been increased fivefold, from 145 to 917 cubic metres, establishing walk-in coolers and walk-in freezers at the central store and adequate ice-lined refrigerators and freezers at provincial, district, and municipal stores. 175 municipalities out of 753 have vaccine stores with functional cold chain equipment, and the remaining municipalities have small populations and ensured vaccine supply from other nearby municipalities. Nepal has not experienced vaccine stockouts in the last three years. A robust procurement mechanism ensures an uninterrupted supply of vaccines either through Gavi support or through multi-year procurement by the government.

Coverage assessments are done through DHIS2 data (routinely entered by health post staff); periodic surveys, such as post campaign coverage surveys; coverage evaluation surveys by third parties; demographic health surveys and multiple indicator cluster surveys done by the MOHP; and routine real-time immunization monitoring by independent monitors recruited by WHO with the concurrence of district managers.

The Department of Drug Administration issued Emergency Use Authorization for WHO Emergency Use List vaccines to limit COVID-19 transmission, and Nepal demonstrated very high coverage with COVID-19 vaccination, at over 80% of the total population. Guidelines and SOPs were developed as per WHO SAGE recommendations for equitable distribution and use of vaccines.

Despite these remarkable successes in routine and COVID-19 vaccination, the immunization programme has further challenges to address: adapting to the new federal context and ensuring full ownership of immunization programmes by province, district and municipal administrations; formulating an urban immunization strategy in the context of migration and rapid urbanization; and involving the private health sector in immunization for epidemic control. At this stage, the country is working on all these issues, incorporating them into the National Immunization Strategy and trying to build a resilient immunization system that will remain resilient during any disaster or epidemic.

Focusing on the capacity of the immunization service delivery system to respond promptly and adequately to any health risks and/or public health emergencies of international concern (PHEIC), in addition to the priority actions outlined in this section it would be advisable for the national immunization programme to focus on the following areas:



- sustaining achievements in routine immunization;
- ensuring adequate funding for innovative approaches;
- developing a separate urban immunization strategy with mobile clinics and/or evening or Saturday sessions targeting urban slums, children of working parents, street children, institutions such as orphanages, jails and brothels, and other high-risk populations and institutions;
- digitalizing routine immunization, providing electronic registration of target children and app-based monitoring at all stages; and
- accommodating vaccination and surveillance against zoonotic diseases within existing human and cold chain capacity.

Indicators and scores

P8.1. Vaccine coverage (measles) as part of national programme – Score 4

Strengths

- Functional immunization committees at municipality level and below decide how to register newborn children and women of reproductive age, and how to catch dropout children.
- Nepal holds regular reviews and works continuously to build capacity. Microplanning for routine immunization is done annually at municipality level, emphasizing hard-to-reach areas and high-risk populations.
- Nepal demonstrates innovative approaches to finding and vaccinating dropouts and zero-dose children.

Challenges

- There is no designated focal person for the WHO Expanded Programme on Immunization (EPI) at municipality level.
- Lack of information among parents about vaccination is the main reason for not vaccinating in certain areas (mainly hard-to-reach mountain areas).
- Achieving and sustaining vaccination coverage in urban slums and among migratory populations is challenging.

P8.2. National vaccine access and delivery – Score 4

Strengths

- Cold chain assistants and/or officers at central, provincial and district level monitor vaccine potency and maintain cold chain equipment.
- An effective vaccine management assessment is conducted every 2-3 years with support from UN agencies.
- “Immunization month,” the first month of the Nepali calendar, is used to implement a “Search and Immunize” strategy.
- Regular monitoring of vaccine coverage and dropouts is conducted, with monitoring sheets provided to all health posts, municipalities, and districts. Monthly review meetings at municipality level and bi-annual and annual immunization programme reviews at municipality, district and provincial levels are done to identify gaps in the programme.

Challenges

- There is a lack of designated trained staff for repair and maintenance of cold chain equipment in districts and municipalities.
- Frequent migrations to urban areas, the seasonal movement of people and difficult geographical terrain influence access to immunization.

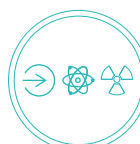
P8.3. Mass vaccination for epidemics of VPDs – Score 4

Strengths

- WHO-Extended Use List vaccines were approved by the regulatory authority to save lives from COVID-19.
- Vaccination of citizens older than 12 is provided with highest level of flexibility (i.e. without the need for online registration and/or vaccination cards), with particular focus on people with disabilities, immunocompromised people and comorbid populations.
- A cholera vaccination campaign was arranged in response to an outbreak in Kapilvastu District.
- A nationwide MR and TCV campaign was conducted, guided by the Global and Regional Vaccine Action Plans, to eliminate measles and rubella by 2023.
- Nepal has SOPs and outbreak preparedness and response plans for different vaccine preventable diseases (VPDs), updated with WHO guidance.

Challenges

- There is a lack of collaboration, coordination, and involvement of other sectors beyond health.
- Developing the outbreak response plan, conducting simulation exercises and linking them with RRTs have been challenging.
- Implementing vaccination campaigns in mountainous districts imposes high operational costs.



Recommendations for priority actions

- Achieve and sustain >95% MCV II coverage at all administrative levels by 2023 by:
 - » aligning three documents: full portfolio planning, the National Immunization Strategy, and the Urban Immunization Strategy;
 - » microplanning for vaccination in urban areas and slums, including with mapping exercises; and
 - » expanding the reach of mobile clinics to these hard-to-reach and/or vulnerable areas, with particular focus on slums.
- Ensure the repair and maintenance of the cold chain system at all levels by 2030, and ensure sufficient human resources for proper maintenance of cold chain equipment at all levels, by:
 - » continuing work to enhance the capacity of cold chain equipment handlers; and
 - » recruiting highly trained cold chain personnel.
- Improve outbreak detection by 2030: in collaboration with the IHR NFP strengthen VPD surveillance at all levels through the use of IBS and EBS, taking into consideration the integrated disease surveillance system and Polio Transition Plan, and reviewing the possibilities of public/private partnerships.
- Develop national vaccine wastage and immunization waste management plans to move further toward self-sustainability.

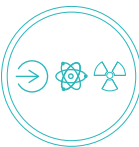
DETECT



D1. National laboratory system

Introduction

Public health laboratories provide essential services including disease and outbreak detection, emergency response, environmental monitoring and disease surveillance. State and local public health laboratories can serve as a focal point for a national system, through their core functions for human, veterinary and food safety including disease prevention, control and surveillance; integrated data management; reference and specialized testing; laboratory oversight; emergency response; public health research; training and education; and partnerships and communication.



Target

Surveillance with a national laboratory system, including all relevant sectors, particularly human and animal health, and effective modern point-of-care and laboratory-based diagnostics.

Level of capabilities

NB The description of Nepal's national laboratory systems and their capacities is cross cutting and should be viewed in context of other related technical areas, including but not limited to AMR, biosafety & biosecurity, surveillance, zoonotic diseases, human resources, legal instruments, financing and IHR coordination.

Nepal's human health laboratory system consists of the National Public Health Laboratory (NPHL); subnational laboratories at provincial and secondary (district) level and in tertiary care hospitals and primary care/community centres; and private diagnostic laboratories. According to the latest available data (from 2019), there are 3141 registered laboratories across the country, with additional unregistered labs in the private sector.

The NPHL, located in Kathmandu, was established in 1968 as the central health laboratory and designated in 1991 as the National Reference Laboratory for all infectious diseases except TB. The NPHL is also mandated by the MOHP as the regulatory authority for laboratory licensing, blood transfusion services and noncommunicable diseases, and runs the National External Quality Assurance Programme (NEQAS) for priority infectious diseases.

The NPHL is well equipped to perform testing for most pathogens of public health importance, including respiratory pathogens such as SARS-CoV2, influenza, RSV, adenovirus, etc.; enteric pathogens such as salmonella, vibrio cholerae, rota virus, etc.; vector-borne pathogens such as malaria, dengue, chikungunya, etc.; and HIV, Hepatitis B and C, and TB. At various levels of the network the health laboratories offer rapid diagnostic tests, microscopy, serology, microbiology culture, antibiotic sensitivity testing, molecular testing and whole genome sequencing (WGS) services. The NPHL coordinates the National Pathogen Genome Sequencing Consortium.

Sample referral mechanisms from peripheral health facilities and labs to the NPHL are in place for ILI/SARI, Sars-CoV 2, HIV, TB, AMR etc., with one courier service for sample transport across Nepal. Personnel trained by the International Air Transport Association (IATA) are available up to subnational level, and international shipment of specimens is adequately streamlined as long as funds are available.

In the health sector, reporting of laboratory data can be to the EDCCD, physicians or the patient, using various formats including hard copy reports, email, SMS, online reporting, etc. The delivery of the result depends on the nature of the test performed, and the time taken ranges from six hours minimum to 10 days.

The Central Veterinary Laboratory (CVL), established in 1994, is the designated National Reference Laboratory for animal health and AMR surveillance of livestock and poultry. It has sections for microbiology, molecular biology, pathology, veterinary public health and biosecurity and biosafety. There are eight veterinary diagnostic labs – the CVL, five veterinary laboratories, the FMD & TADS lab (Foot & Mouth Disease and TADs lab, a specialized laboratory for transboundary animal diseases) and the national avian disease investigation laboratory) – with basic and primary laboratories at district and local levels. In addition, a Veterinary Standards & Drug Regulatory Lab (VSDRL) is the quality standards laboratory for analysis of milk and meat samples, drugs and biologicals. The VSDRL also acts as the risk analysis secretariat of the DLS, and is the national animal feed and livestock quality management laboratory for quality analysis of milk, feed and fodder.

Nepal has one vaccine production laboratory that produces 13 vaccines for use in animals, including rabies and anthrax; an Animal Health Research Division for research on cattle infertility, brucellosis, swine diseases and AMR; and an Agriculture & Forestry University Laboratory with serology and molecular testing capacities.

Established protocols for specimen transport are well disseminated, while in severe or emergency situations local animal health staff also transport samples or animal carcasses to the CVL, one of the five regional labs, the FMD and TADs lab, or the National Avian Disease Investigation lab. Laboratory reports from the CVL, regional veterinary labs or other labs are sent back through the district veterinary hospital and/or livestock expert centre by email, with most results available in under a week.

Nepal's laboratory network has developed a joint list of priority zoonotic diseases, and has good diagnostic capacities for all endemic and priority pathogens in both human and animal health laboratories. Specimens can be shipped to the national reference laboratories within 24-48 hours from most areas. In case of outbreaks in remote areas or in emergency situations, air transportation services are provided.

Only the NPHL and five further private sector laboratories are accredited to ISO 9001 and ISO 15189 standards with well-developed lab quality management programmes in place. The health sector has developed its own licensing and quality standards for laboratories, in line with good laboratory practices: the Health Institution Operation Standards 2020 classify health laboratories into Categories A-E, with clear criteria for assessment, licensing and monitoring. The national influenza centre and Japanese encephalitis labs are WHO approved/accredited.

The NPHL is implementing the NEQAS for external quality assessment at national level, with around 21% of labs participating in the programme, mostly from the private sector. Separate external quality assurance (EQA) programmes are run for SARS-COV-2, HIV and AMR.

Animal health laboratories do not currently have licensing standards in place, and Nepal has no ISO 17025 accredited laboratories. The CVL is, however, currently working towards this accreditation, good quality manuals are available, and some staff training has been conducted. The CVL participates in proficiency testing on Peste des Petits Ruminants, lumpy skin disease, brucellosis and AMR from different WOAHA-accredited laboratories, and in the NPHL NEQAS programme. In turn, the CVL conducts quality monitoring of its regional/subnational labs.

Human and animal health laboratories collaborate in many areas, including the work of a designated joint technical working group (TWG) on AMR with representation from the food, environment and animal health sectors; the National Influenza Surveillance Network (NISN); and the National Pathogen Genomic Consortium, containing members from the animal health sector, AMR surveillance and the ESBL (extended spectrum beta lactamase) E.Coli Tricycle project. Nepal recently set a good precedent by using veterinary laboratories for PCR testing during COVID-19 surges in the early phases of the pandemic.

Indicators and scores

D1.1. Specimen referral and transport system – Score 3

Strengths

- Health laboratories have IATA certified laboratory personnel, dry ice and internal courier services.
- Coordination and support are available from partners for some international shipments.
- In animal health laboratories, referral and transport mechanisms exist for HPAI (but only for HPAI).
- In the veterinary sector, coordination and support are available from the district laboratory tiers and veterinary field services, and some support is available from airline services for sample transportation.
- Documents and videos have been developed for sample collection, package and transport for priority diseases (including the monkeypox outbreaks that were emerging at the time of the JEE).
- There is prompt transfer of sample transport media and human resources during suspected cholera outbreaks in provincial areas.
- Simulation exercises are performed for pandemic preparedness.
- The government allocates some budget for sample transport.

Challenges

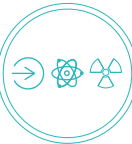
- Courier services are not strong overall, with delays in sample pick-up and delivery. Courier services are not available in some hard-to-reach/inaccessible areas.
- Most couriers are not ready to handle infectious samples and they can refuse pickups.
- Veterinary labs do not have any formal courier contracts, and referral/transport mechanisms are yet to be developed for some infectious diseases.
- International travel restrictions can limit or totally stop sample transport, when flight carriers do not permit specimen transfer with dry ice.
- Delays have been experienced in receiving sample results sent internationally for testing or confirmation.
- It can be difficult to obtain standard packaging.
- Temperature maintenance of shipments can be challenging.

D1.2. Laboratory quality system – Score 2

For this indicator, the human health sector scored at level 4, as National Quality Standards have been developed and are being implemented nationally and subnationally; the NPHL and five private sector labs are accredited to ISO15189 standards; and mandatory laboratory licensing is implemented in line with the quality requirements outlined in the national quality standards for health laboratories. The NPHL is running the NEQAS to oversee national external quality assessment and control, and there are separate EQA programmes for SARS-COV-2, HIV and AMR.

However: while the animal health sector does have licensing standards in place, there are no accredited laboratories. Because of this, the animal health sector score is level 2, which is also the overall consensus score at national level.

That being said, there is clearly immense capacity in the human health sector that can be leveraged to support the animal/other laboratory sectors and strengthen overall capacities in future through collaboration and joint initiatives.



Strengths

- Nepal has national standards for health sector laboratories.
- The NPHL is ISO 15189:2012 certified and is the national licensing authority for health sector labs.
- The NEQAS is regularly conducted in the human health sector for priority diseases, and participation in NEQAS is mandatory for renewal of laboratory licenses.
- Federal hospitals and provincial laboratories provide training-of-trainers on quality management systems.
- Support for the accreditation of provincial health labs is covered in the health sector annual work plan.
- The NPHL conducts validation of COVID-19 kits and reagents.

Challenges

- Health sector participation in NEQAS is low. Only 654 labs participated, of which only 69% of private sector labs and 33% of government labs responded with results.
- Multiple organizations provide licensing, making it difficult to maintain an accurate record of licensed laboratories.
- Accreditation is voluntary, and there is low interest in accreditation from laboratories and hospital management.
- There are no standards or licensing for animal health/veterinary sector laboratories.
- National quality standards are not available for biomedical equipment, reagents and kits.
- There are issues with compliance and quality control in private and provincial veterinary laboratories, as there are no mechanisms to ensure quality control.

D1.3. Laboratory testing capacity modalities – Score 3

For this indicator, the human health sector scored 4, as the NPHL has capacity for all endemic and priority diseases, including in country capacity for genetic sequencing. However, because the CVL has only adequate testing capacity with access to sequencing through international collaboration, this area achieved an overall national score of 3.

Strengths

- Nepal has modern equipment, including WGS, real-time PCR, automated extraction platforms, MALDI-TOF for bacterial identification and VITEK and other systems for antimicrobial resistance testing.
- All the capacities above are available in the veterinary reference lab, except for genetic sequencing.
- The support of international collaborating laboratories is available for tests that cannot be done in-country (mainly through WHO).
- The number of COVID-19 testing laboratories increased rapidly from one to 105 during the pandemic.
- With increasing PCR experience, tests like monkeypox, zika, chikungunya and rabies are standardized.
- A draft national essential in-vitro diagnostic list has been prepared which lists tests available at community, district, provincial and national level.
- Provincial public health labs (PPHL) are established in provinces in both the human health and veterinary sectors, and labs are available down to community level.
- The animal health sector provides laboratory services for avian influenza, transboundary animal disease and toxins, and biological residue detection.

Challenges

- Emerging pathogens present a continuing challenge.
- There is no focus on laboratory-based research.
- Procedures to get government permission for the NPHL to engage in international collaboration are complex and frustrating.
- There are no fixed channels of communication between different lab stakeholders.
- There is no formal mechanism for reporting laboratory data to epidemiology and surveillance teams.

D1.4. Effective national diagnostic network – Score 3

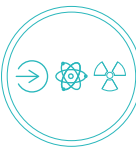
For this indicator, the human health sector scored at 4, as the NPHL has developed an essential diagnostics list outlining tier-specific testing facilities. For licensing purposes, health laboratories are classified in five categories. In the veterinary sector, tier specific diagnostic capacities are somewhat defined but are not fully implemented. Based on an overall review of available capacities and some areas that need strengthening, the consensus score for this indicator is 3.

Strengths

- Nepal has an effective laboratory network for AMR, Japanese encephalitis, measles, HIV, influenza and SARS-CoV2.
- Point of care and rapid tests are available for most priority diseases in both sectors down to community level.
- Documentation for tier-specific laboratory testing has been developed in the human health sector.
- In the animal health sector, dedicated laboratory networks are functional for AMR, foot and mouth disease and avian influenza, and there is a network of eight veterinary and livestock-related diagnostic laboratories.
- Veterinary sector laboratories supported the human health sector by providing SARS-CoV2 testing in the early phases of the pandemic.
- A National Steering Committee for One Health is notified.
- The National Genetic Consortium has been notified.
- International collaboration with WHO Collaborating Centres and reference laboratories is functioning well in both sectors.

Challenges

- Health laboratory standards have been developed mainly for licensing purposes. The standards document is not fully based on ISO 15189 and does not cover all the priority or notifiable diseases.
- Both sectors face budget constraints in running and maintaining expensive tests.
- The private sector refers patient/human samples to international labs and this is not always legal.
- Coordination between different tiers of human health laboratories is not effective. The roles of different tiers in the federal context are not defined and/or not followed.
- Not all laboratories have the same capacities for testing priority pathogens in both sectors. National reference laboratory capacities do not reflect capacity at subnational levels.
- In both sectors, laboratories suffer from a lack of adequate infrastructure, equipment, human resources, etc.
- Animal health has no defined legislation for networking the CVL with provincial laboratories, which has a negative impact on the sharing and reporting of information.
- No formal mechanisms are in place for coordination and sharing information and data with surveillance and field epidemiology personnel/teams.



Recommendations for priority actions

- Ensure that all recommended priority actions, including strategic planning, are included in the annual budgets of relevant sectors.
- Develop and implement national guidelines for specimen referral and transport between different tiers of laboratories for all priority diseases, taking a One Health approach and using support from public/public-private partnerships to reach all levels.
- Review, endorse/approve and implement all relevant strategic documents and initiatives, using a One Health approach, to strengthen laboratory capacity for detection of priority and notifiable diseases at all levels. These should include the National Laboratory Strategy; laboratory capacity mapping; setting standards for biomedical equipment, IVD reagents and kits; developing regulatory mechanisms for vendor licensing, IVD kits/reagents, market surveillance, supply chain management etc.; a National Essential In Vitro diagnostics list for the human sector; national laboratory standards and licensing protocols for veterinary labs; and a tiered diagnostic testing plan for the veterinary sector.
- Develop, implement and test a formal mechanism for coordination and information/data sharing between laboratories and epidemiology and other relevant stakeholders, using a One Health approach and leveraging existing multisectoral task force/Steering Committee structures.
- Improve the laboratory quality management system, through:
 - » developing the capacity of the laboratory workforce through joint initiatives in cross-cutting areas including but not limited to AMR, biosafety/biosecurity, lab quality and diagnostics; and
 - » expanding existing programmes for accreditation, licensing, and/or stepwise laboratory quality improvement towards accreditation for national and subnational laboratories (12 in the human health sector and 11 in the animal health sector), in accordance with ISO standards 15189 and 17025 and NEQAS (ISO 17043).
- Increase the capacity of national and selected provincial laboratories to deal with high threat, emerging and re-emerging pathogens, using a One Health approach, through:
 - » building national capacity for diagnostic testing, molecular characterization and sequencing of priority pathogens; and
 - » supporting the NPHL and CVL in operational research, through national and international collaboration, for enhanced preparedness and response under IHR.

D2. Surveillance



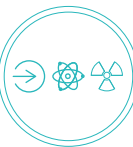
Introduction

The purpose of real-time surveillance is to advance the safety, security and resilience of the nation by leading an integrated surveillance effort that facilitates early warning and situational awareness of all IHR hazard-related events.



Target

(1) Strengthened early warning surveillance systems that are able to detect events of significance for public health and health security; (2) improved communication and collaboration across sectors and between national, intermediate and primary public health response levels of authority regarding surveillance of events of public health significance; and (3) improved national and intermediate level capacity to analyse data. This could include epidemiological, clinical, laboratory, environmental testing, product safety and quality, and bioinformatics data; and advancement in fulfilling the core capacity requirements for surveillance in accordance with the IHR.



Level of capabilities

Through the MOHP and the Ministry of Agriculture and Livestock Development (MOALD), the government of Nepal has developed and implemented a variety of surveillance systems to monitor and respond to signals of public health concern across the human, animal and environmental health sectors.

EWARS has been used for sentinel site surveillance since 1996, and at the time of the JEE 118 sentinel sites were reporting on six notifiable diseases – though a revision and expansion of this list was underway and was expected to be rolled out to all sites in the months following the JEE. Additionally, there were plans to expand the 118 sentinel sites, which are currently in larger provincial or district hospitals, to smaller, local level health facilities. Plans for a phased roll-out of this were also still under discussion.

EWARS data is entered into the electronic DHIS2 system at health facility level, but there are challenges with capturing all relevant data from every ward, and particularly from outpatient departments. Difficulties in this area have impacted both the completeness and timeliness of the data reported. Efforts to improve timeliness with capacity building and mentorship systems were underway at the time of the JEE.

A key strength of surveillance in Nepal is the production of a weekly EWARS bulletin (for which data are analysed weekly and published to a publicly accessible online site) and an annual report. These demonstrate that the key frameworks are in place for sharing information publicly and across sectors. Lab data is currently linked to the EWARS system in an aggregated format, allowing for some linked analysis.

A small number of additional indicator-based surveillance systems managed through the Family Welfare Division include vaccine preventable disease surveillance for acute flaccid paralysis, measles/rubella, Japanese encephalitis, neonatal tetanus, and acute watery diarrhoea. More information on the strengths and support needs of the surveillance system can be found in the Immunization section of this report.

Laboratory surveillance is also in place for influenza and SARS-CoV-2, which is entered into FluNet and the WHO Global Influenza Surveillance and Response System (GISRS). More information on this surveillance system can be found in the National Laboratories section of this report.

A dedicated AMR surveillance network consists of 26 sites conducting surveillance on 10 pathogens, with plans for eventual linking of surveillance of hospital-acquired infections. More details on the AMR surveillance system can be found in the AMR section of this report.

The Zoonotic Influenza Distribution and Ranking (ZIDAR) system is also analysed and shared regularly to underpin a One Health approach for influenza.

A few other syndromic surveillance systems exist in Nepal. These include but are not limited to surveillance for malaria, TB, and maternal and perinatal disease. Maternal and perinatal disease function under event-based surveillance (EBS) systems as well, through a network of female community health volunteers using mobile data collection technology.

For animal health surveillance, indicator-based surveillance systems are in place for avian influenza in 10 high risk districts, and periodic surveys are conducted for brucellosis, zoonotic TB, toxoplasmosis, Q-Fever and leptospirosis. More information on animal health surveillance can be found in the Zoonotic Disease section of this report.

Event-based surveillance does not currently function well at national level but is being expanded to national call centres and media monitoring and at the time of the JEE it was expected to be functional soon. There is no formal community or health facility EBS, or any other community-based surveillance system, for human health signals, though this does exist for environmental and animal health signals. Rapid response teams are able to link together for rapid mobilization of female community health volunteers, though the availability and capacity of trained health care workers for event reporting could be strengthened. The overall process for community surveillance could also be strengthened with the development of formal guidelines and some supplementary training.

Rapid response team structural guidelines are in place for the verification and investigation of One Health events from national to local level. These guidelines clarify at which levels verification, investigation and risk assessments should take place; include pathways for communication and information sharing across levels; and outline budget mechanisms. The process for ensuring a multisectoral team is a challenge, however, because multisectoral approvals slow the process and there are no budgets for engaging subject matter experts during outbreak investigations. Specimen collection and transportation pose additional challenges because of limited coverage of courier services. Capacity could be improved with the development of a template for risk assessments and a platform for real-time exchange of information between sectors at administrative level to improve public health decision making.

Currently there are no processes for data validation or quality assurance across any of the surveillance systems in place, nor are there any regular monitoring and evaluation mechanisms. Statistical officers are present at federal and provincial level for analysis, but advanced analysis could be strengthened at provincial and central level. Additionally, enhanced linkages between epidemiological, laboratory and clinical staff and institutions are needed for improved epidemiological analysis and public health decision making. Logistical support to improve these, including better internet access, tools and technology for better data collection and systems for real-time data visualization and analysis, could improve analysis and information sharing to support public health decision-making.

Indicators and scores

D2.1. Early warning surveillance function – Score 3

Strengths

- EWARS serves as the early warning surveillance system in Nepal, through sentinel sites at federal, provincial and local hospitals, with reporting through DHIS-2.
- The EDCC produces weekly electronic EWARS bulletins and annual reports that are publicly available online and which present data on all reported diseases, annual trends, and reporting status.

Challenges

- An EBS system is currently being established to include call centres and media monitoring through EIOS (Epidemic Intelligence from Open Sources), but has not yet been fully implemented.

- Further EBS systems (including community EBS for human, animal, environmental and other hazards) could be expanded and strengthened.
- Timeliness and completeness of data sharing through EWARS has been a challenge, but efforts are underway to improve this.
- Currently there are no processes for data validation and/or quality assurance, nor are there any regular monitoring and evaluation mechanisms for the existing surveillance systems.



D2.2. Event verification and investigation – Score 2

Strengths

- Rapid Response Teams are trained and functional at national and subnational levels (down to local level), with supporting guidelines in place for validation and investigation of suspected disease outbreaks.

Challenges

- Subject-specific experts from multiple sectors are not always available to support verification and risk assessment of events.
- Guidelines and methodologies for risk assessments are not available at all levels, and there are no proper channels to disseminate related information.



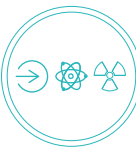
D2.3. Analysis and information sharing – Score 3

Strengths

- Statistical officers are present at federal and provincial level for information analysis. Information is shared between sources when applicable.

Challenges

- Multisectoral information sharing pathways are not formally established, nor are there clear data platforms to facilitate sharing or improve data analysis across sectors.
- Existing surveillance systems are not integrated, nor is data well shared across sectors. This limits the use of surveillance data in effective public health decision making. These existing systems include EWARS; syndromic surveillance systems for infectious disease, VPDs, SARI/ILI, etc.; various lab systems; and other surveillance systems for specific signals (e.g. for AMR, maternal deaths, injuries, water quality, etc.).
- Capacities for advanced analysis of data (including but not limited to geospatial modelling and time series) are lacking at central and provincial level.



Recommendations for priority actions

- Develop, implement, test and strengthen a National Alert and Response Framework that includes:
 - » event-based surveillance (i.e. call centres, media monitoring including EIOS, and community and hospital surveillance);
 - » indicator-based surveillance (in health facilities and laboratories); and
 - » risk-based surveillance systems.
- Develop and implement a multisectoral risk assessment and Outbreak Response Plan by 2025.
- Develop and implement a multisectoral architecture and platform for sharing health data and information, and ensure it is used for joint sharing and analysis of data at all levels, in both the public and the private sectors, for surveillance and response.
- Strengthen the capacity of the multisectoral workforce at national and subnational level through a sustainable training programme that enhances surveillance and response capacities under the IHR.

D3. Human resources

Introduction

Human resources are important in order to develop a sustainable public health system over time by developing and maintaining a highly qualified public health workforce with appropriate technical training, scientific skills and subject-matter expertise. Human resources includes nurses and midwives, physicians, public health and environmental specialists, social scientists, communication, occupational health, laboratory scientists/technicians, biostatisticians, IT specialists and biomedical technicians and a corresponding workforce in the animal sector: veterinarians, animal health professionals, para-veterinarians, epidemiologists, IT specialists etc.

The recommended density of doctors, nurses and midwives per 1,000 populations for operational routine services is 4.45 plus 30% surge capacity. The optimal target for surveillance is one trained (field) epidemiologist (or equivalent) per 200,000 populations who can systematically cooperate to meet relevant IHR and PVS core competencies. One trained epidemiologist is needed per rapid response team.

Target

States Parties with skilled and competent health personnel for sustainable and functional public health surveillance and response at all levels of the health system and the effective implementation of the IHR (2005).

Level of capabilities

The Constitution of Nepal 2015 institutionalizes specific civil and human rights, including the right to a clean environment (in Article 30) and the right to health (Article 35). It also emphasizes the right to free basic health services from the state and stipulates that no-one shall be deprived of emergency health services, and confers specific rights to information, equal access to health services, and access to clean drinking water and sanitation. Human resources are an essential component of the health system's ability to manifest these rights and remain responsive to the needs of the people.

The government has prioritized the production, recruitment, deployment, and management of human resources for health (HRH), as shown by the inclusion of human resources in many national policies (e.g. the National Health Policy 1991, the National Health Policy 2019, the Nepal Health Service Act 1997, the Nepal Health Service Rules 1999, etc.). This priority is currently affirmed by Nepal's 10-year National Strategy on Human Resources for Health 2020-2030, which has a five-year HRH action plan that envisions equitable distribution and availability of a high-quality health workforce across the national health service system to ensure universal health coverage (UHC).

The strategic goal of producing and distributing good skill mixes and a skilled health workforce, considering population density, geography and federal structure, and ensuring maximum utilization of available resources, is clearly highlighted in the strategy. Specifically, it aims to produce expert human resources in new areas like health informatics, health economics, epidemiology, health disaster management and health policy planning for the Nepalese health sector.

Nepal also provides an enabling environment to support human resources specifically for animal health, underpinned by instruments such as the Civil Service Act 1993 and the Civil Service Rules 1993, which together form a metapolicy that guides civil service personnel including animal health personnel.

The National Strategy on Human Resources for Health does not, however, yet include all relevant sectors and/or public health professionals. This strategy therefore needs to be revised to include all relevant stakeholders and provide the foundation for a truly multisectoral workforce that will drive Nepal's health systems towards One Health.

Appropriate and competent human resources are available in some relevant sectors (especially at national level) to detect, assess, notify, report and respond to events according to IHR provisions. Specifically for human health, the list of existing human resources is outlined in the National Human Resources for Health Strategy, which shows that approximately 80.2% of government HRH staff are placed at local level; 11.4% at provincial level; and 8.4% at federal level. Further, Nepal has multifunctional, multidisciplinary RRTs and emergency medical deployment teams (EMDTs) at federal, provincial, and local levels that respond regularly to public health threats. There is also an interim guideline in place that mandates and guides the structure, function and TORs of these teams and the relevant committees.

At national level, the One Health Strategy 2019 serves as the central blueprint for multisectoral collaboration in the control of zoonotic disease. The strategy provides for a Steering Committee and a Technical Co-ordination Committee that formulate plans and execute responses in the event of an outbreak. However, it can be noted that for animal health there is still a shortage of certain necessary HR capacities, such as nurses and social scientists.

Regular, routine competency-based training programmes and standards are available for some professions, cadres, and sectors for both human and animal health. Programmes conducted in the past have included – among others – RRT training, the Epidemic and Pandemic Preparedness and Response Programme (EPPR), EMDT training, basic emergency training packages, a Field Epidemiology Training Programme (FETP), and training for risk communication and community engagement (RCCE). There is still, however, a need to establish and/or strengthen joint trainings and capacity building platforms for intersectoral collaboration, ensuring the inclusion of all relevant stakeholders and One Health actors.

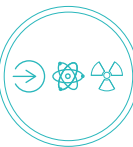
For human health, workforce surges during public health events and/or emergencies are addressed in the strategic plan. A gap analysis of the surge health workforce for emergencies was done and used as a basis for the plan. In addition, the Public Health Service Regulation of Nepal (Chapter 8, Clause 27 (5)) provides for the ability to mobilize staff working in or operating health institutions by taking them under direct control during a public health emergency. For animal health, however, there is no formal documentation/plan or legislation for workforce surge during a public event and/or emergency. There is therefore a need for a national multisectoral surge workforce strategic plan for emergencies that includes but is not limited to the human and animal health workforces.

Indicators and scores

D3.1. Multisectoral workforce strategy – Score 2

Strengths

- National level policies, acts, regulations and plans are in place for workforce strategy management.
- Rapid Response Teams are formed and deployed during any public health emergency and/or disaster.
- Nepal has a COVID-19 Crisis Management Centre comprising health authorities from different ministries.
- For animal health, there are systems for AMR surveillance and multisectoral coordination during avian influenza outbreaks (through the Central Bird Flu Control Co-ordination Committee).



Challenges

- Staff are challenged by high workloads and high turnover rates.
- Career paths are not clear and incentivizing mechanisms are lacking or inadequate (e.g. there is no incentivization for undertaking high-risk activities).
- It is difficult to retain government staff and expertise in any given technical area because of a policy of periodic personnel rotation.
- Stronger coordination and technical collaboration are needed between the three tiers of government.
- The animal health sector has no dedicated workforce for laboratories or field epidemiology, and is subject to frequent reshuffling.

D3.2. Human resources for implementation of IHR – Score 2

Strengths

- There is close collaboration between primary care facilities and communities.
- Multidisciplinary RRTs, tailored to the needs of each response, have been formed at all levels.
- Female Community Health Volunteers (FCHV) were trained for case investigation and contact tracing (CICT) during COVID-19.
- A CICT guideline was drafted and local CICT teams were mobilized during COVID-19.
- Veterinary laboratories are well tiered and have good quality human resources.
- There is a level of multisectoral capacity to respond in zoonotic outbreaks as stipulated by the One Health Strategy 2019, the DRRM Act 2017 and the Bird Flu Control Rules 2022.
- The WOAHA delegates and has designated eight focal points (for food safety, disease notification, wildlife, aquatic animals, welfare, communication, veterinary products and laboratories respectively).
- Ad hoc outbreak investigations are undertaken by the public health and animal health sectors, with multisectoral human resources deployed in outbreaks.
- Nepal has a good network of quarantine offices underpinned by a legally binding instrument.
- Surveillance is in place for anti-microbial use and AMR in animal health.

Challenges

- Nepal has limited data science, digital technology and/or related human capacity to support IHR activities such as big data analytics and forecasting.
- There is a limited number of trained personnel and a high turnover rate.
- Incentives are lacking and the risks of many IHR activities outweigh the rewards.
- Levels of understanding and implementation practices differ between local health authorities.
- There is a need for refresher training on standardized investigation and control practices.
- More capacity building activities are needed, especially for the animal health sector.
- There is inadequate integration of information and communication technology in the animal health sector.
- More multisectoral collaboration between One Health stakeholders is needed.

D3.3. Workforce training – Score 3

Strengths

- Nepal has a government training centre (the National Health Training Centre or NHTC/Staff College).
- A range of different trainings and learning resource packages are made available.
- Nepal has EWARS surveillance sites.
- The Agriculture Service has a range of separate training centres, including the federal level Agriculture Information and Training Centre (AITC).
- Livestock Service Training Centres are present in seven provinces.
- Administrative level training is offered to mid- and high-level executives at the Nepal Administrative Staff College (NASC).
- Relevant animal health training is available, including in laboratory diagnosis, field epidemiology, animal birth control (ABC), clinical and radiology practices, and others.
- Training has been started in wildlife medicine and for other relevant stakeholders such as veterinarians/ para-veterinarians from the Army, Police, the Nepal Agricultural Research Council (NARC) and the private sector.

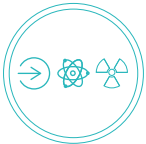
Challenges

- Sustaining government budgets for human resources is challenging.
- Mentors have heavy workloads.
- Maintaining the quality and sufficient quantities of mentors is difficult.
- It is challenging to allocate the necessary budgets during emergencies.
- Training manuals are needed for various workers in animal health.
- There is insufficient expertise among national animal health trainers, and not enough exposure to international animal health training.
- There is a need to improve dissemination of training and learning resources to the relevant institutions and colleagues.

D3.4. Workforce surge during a public health event – Score 1

Strengths

- Regulatory acts and legislation are available to support the mobilization of health personnel during public health emergencies.
- A CICT team was established for COVID-19.
- During the Avian Influenza outbreak in 2009, temporary staff members were deployed in high-risk districts throughout Nepal
- The Nepal Veterinary Association (NVA) and the Nepal Veterinary and Livestock Association (NEVLA) are involved in responses to earthquakes, floods and other natural disasters, helping rescue, treat and rehabilitate animals.



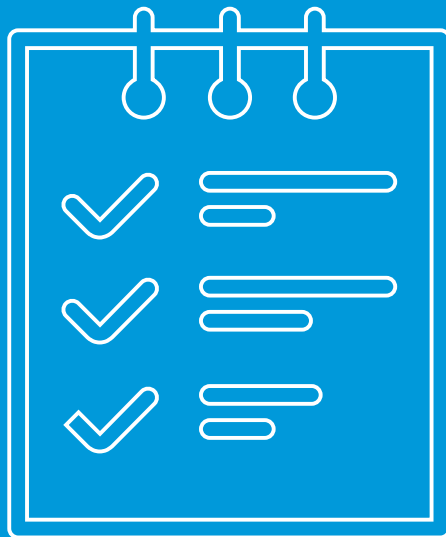
Challenges

- The importance of surge capacity requires greater recognition.
- There is a need for schemes to increase motivation to participate in the work of emergency operation centres (EOCs).
- Retention of trained staff is a challenge.
- Task shifting is a challenge.
- Certain critical tasks are underpaid.
- Nepal lacks formal incentives.
- There is no formal documentation or legislation to underpin workforce surges in animal health.

Recommendations for priority actions

- Develop, endorse and implement a multisectoral workforce plan for IHR core capacities, involving all relevant stakeholders and leveraging the One Health National Steering Committee.
- Develop and endorse national a workforce surge strategy for responses to public health emergencies, and test it using simulations.
- Extend IHR core competency assessment and gap analysis to all relevant sectors other than health, and provide training programmes/initiatives to address gaps, for areas including but not limited to:
 - » field epidemiology;
 - » emergency medical technicians
 - » rapid response teams;
 - » laboratory leadership; and
 - » surveillance.

RESPOND



R1. Health emergency management

Introduction

This capacity focuses on management of health emergency and systems for enabling countries to be prepared and operationally ready for response to any public health event, including emergencies, as per the all-hazard requirement of IHR. Ensuring risk-based plans for emergency preparedness, readiness and response, robust emergency management structures and mobilization of resources during an emergency is critical for a timely response to public health emergencies.

Target

(1) Existence of national strategic multi hazard emergency assessments (risk profiles) and resource mapping. (2) Existence of emergency readiness assessment (3) Development of national health EOC plans and procedures. (4) Establishment of an emergency response coordination mechanism or incident management system. (5) Evidence of at least one response to a public health emergency within the previous year that demonstrates that the country sent or received medical countermeasures and personnel according to written national or international protocols. (6) Existence of an emergency logistic and supply chain management system/mechanism. (7) Existence of policies and procedures for research, development and innovation for emergency preparedness and response.

Level of capabilities

Nepal has witnessed several major natural disasters in the last two centuries, including major earthquakes in 1833, 1934 and 2015 and the Koshi floods. Apart from these disasters, Nepal also faces frequent landslides during monsoon season, lightning, storms, and regular seasonal flooding. In the recent past the country has faced the COVID-19 pandemic and experienced outbreaks of cholera and dengue.

Nepal has many legal provisions (Acts and Regulations), plans, frameworks, guidelines, directives, and strategies that facilitate the management of health emergencies. The EDCC functions as the IHR NFP.

Nepal has mechanisms for health emergency preparedness and response at all levels. The National Emergency Operation Centre (NEOC) is the central coordination point for disaster response and coordinates emergency preparedness and response for the whole country. The NEOC is the central coordination point for humanitarian assistance; coordination among all responding agencies; and collecting, analysing and disseminating disaster information to stakeholders. District emergency operation centres (DEOC) are established under the NEOC to coordinate emergency activities in the respective districts.

There are also dedicated emergency operation centres for the health sector. The National Health Emergency Operation Centre (HEOC) coordinates with the NEOC and the provincial health emergency operation centres. The provincial HEOCs coordinate down to municipal level (i.e. implementation level). The HEOC functions as the secretariat of the MOHP Incident Command System (ICS) during health emergencies and disasters, working with the National Disaster Risk Reduction and Management Authority (NDRRMA) under the Ministry of Home Affairs and other related bodies as a health sector focal point. The HEOC coordinates with international bodies, non-governmental organizations and other organizations during emergencies and disasters, and coordinates with hub-and-satellite hospital networks to facilitate

service provision during emergencies and disasters. There is an established ICS in the health sector in which the Secretary to the MOHP acts as Incident Commander.

Indicators and scores

R1.1. Emergency risk and readiness assessment – Score 1

Strengths

- Hazard/disease-specific readiness plans (e.g. a monsoon plan and a COVID-19 plan) have been developed.
- Simulation exercises on public health emergencies are regularly conducted in collaboration with relevant stakeholders.
- A digital platform is used for risk mapping and sharing. Natural disaster risk profiles and diseases of current threat are shared through web portals.
- EWARS is in place in 118 hospitals throughout Nepal.
- Formal mechanisms are in place to assess readiness for public health emergencies. Simulation exercises and drills on public health emergencies and disaster response are conducted.
- This area has a range of different legislation, policies, action plans and guidelines.
- Disaster preparedness and response plans are in place at hospital level.
- Strategic risk assessments are used as the basis for emergency preparedness. For example, a rapid action plan for COVID-19 was drafted based on a COVID-19 risk assessment, and a monsoon preparedness plan was written based on the previous years' incidents and risks.

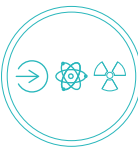
Challenges

- There is a need for an updated national all-hazards risk profile based on a multisectoral, multihazard risk assessment.
- An emergency readiness assessment for potential public health emergencies needs to be conducted and the priorities identified.
- Regular simulation exercises are needed at subnational level.
- Guidelines on risk assessment of public health hazards, disaster and disease control require further development.
- There is a lack of trained human resources and a mechanism for regular capacity building is required.

R1.2. Public health emergency operations centre (PHEOC) – Score 2

Strengths

- The National Health Emergency Operation Centre (HEOC) and provincial HEOCs are established, with provincial HEOCs coordinating down to municipal level.
- There is strong coordination between the NDRRMA, the NEOC and the provincial HEOCs.
- Regular functional and simulation exercises are conducted with the involvement of national and provincial health authorities and security and other relevant agencies.
- The HEOC acts as a secretariat and command centre for the ICS during public health emergencies.



Challenges

- There is a need for stronger mechanisms for sharing information, notifying and coordinating assistance between the HEOCs and the NEOC.
- Integrated public health and disaster data visualization should be made available to support decision making.
- HEOC-specific plans should be developed, including emergency operations plans, civil/military plans, strategic/humanitarian response plans and business continuity plans.
- Human resources in technical areas are insufficient and capacity development and training should be further strengthened.
- Provincial HEOC handbooks are needed.

R1.3. Management of health emergency response – Score 3

Strengths

- The ICS for health emergencies is established and integrated into the national HEOC, which acts as secretariat of the ICS.
- The ICS has been put into practice in simulation exercises and real disasters.
- There are scaled levels for response mechanisms to mobilize additional resources.
- Hub hospitals have hospital disaster preparedness and response plans, hospital ICS and EMDTs. Emergency medical logistics warehouses have been established strategically at 10 hub hospitals.
- Regular tabletop exercises, simulation exercises and intra- and after-action reviews are conducted by the HEOC.
- Mapping of all relevant stakeholders has been updated.

Challenges

- Ensuring effective coordination between provincial HEOCs and the hub-and-satellite hospital networks is challenging.
- There is a need to ensure that the hub-and-satellite hospital networks are more reactive than proactive. To overcome this issue, a revision/update of the Hospital Disaster Preparedness and Response Plan, resource mapping and a series of coordination meetings are required.

There is a need for health emergency response SOPs, with timelines.

R1.4. Activation and coordination of health personnel in a public health emergency – Score 2

Strengths

- The Health Coordination Division coordinates with other relevant stakeholders.
- Emergency medical deployment teams are available at national level and in the hub-and-satellite hospital network.
- Rapid response teams are available at national, provincial and local levels.
- Legislative provisions are in place to support mobilization of health personnel during public health emergencies.
- The Health Coordination Division has an established mechanism to facilitate licensure and mobilization for national and international deployment of health personnel, and to make other arrangements where necessary.
- Four government agencies have partnered with the WHO Global Outbreak Alert and Response Network (GOARN).
- Nepal has adopted emergency medical teams (EMT) guiding principles to develop national EMTs, and participates regularly in WHO global, regional and bi-regional EMT meetings and trainings.

Challenges

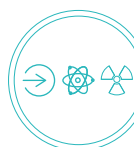
- Designated EMT focal points should be appointed at policy and operational levels.
- Training and guiding documents should be formulated for national and international surge health personnel deployed during public health emergencies.
- Coordinated national, provincial and local action is needed during emergencies.
- The formation of Emergency Management Deployment Teams (EMDTs) should be done by pooling human resources from hub-and-satellite hospital networks, rather than creating the EMDT from the staff of one hospital, which disrupts the services in that hospital.



R1.5. Emergency logistic and supply chain management – Score 2

Strengths

- There are medical stockpiles at national and provincial level and emergency medical logistics warehouses in selected hub hospitals.
- Legislative provisions and guidelines are in place for procurement of emergency logistics and countermeasures.
- A cluster-wise approach is used for receiving international support with the respective ministries acting as leads. For example, the Emergency Logistics Management Cluster is led by the Ministry of Home Affairs and co-led by the World Food Programme.
- A digital platform, the Electronic Logistic Management Information System (eLMIS), is in place to monitor stock of medicines at different levels of healthcare institutions.
- Aid received during emergencies is monitored by the Ministry of Finance Aid Management Information System (AMIS).
- Emergency relief funds are available at federal, provincial and local level.
- Nepal is a signatory of the 2007 Model Agreement for Emergency Customs Procedures.
- A rapid action plan was developed to address the need for COVID-19 countermeasures.



Challenges

- Emergency medical logistic warehouses and supply chains need to be established at all remaining hub hospitals.
- Health emergency logistics management centres should be established at provincial level.
- Logistics suppliers and distribution networks need to be regularly updated.
- There is a need to establish and train surge capacity for emergency logistics functions.
- Logistics support for transporting equipment and personnel during emergencies requires strengthening.
- Coordinated systems should be established for mobilization based on the magnitude and geographical area(s) of different emergencies.

R1.6. Research, development and innovation – Score 1

Strengths

- An independent body, the Nepal Health Research Council, governs research activities in the country.
- Guiding documents on research and priority areas are in place.
- There are 56 institutions with Institutional Review Committees.
- The EDCD has a Surveillance and Research section.
- There is a Research Officer post in the MOHP Incident Command System.

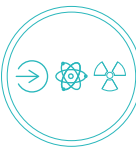
Challenges

- Mechanisms are needed to ensure regular and adequate budget allocations for research activities.
- Mechanisms are needed to ensure that policy and planning are informed by research findings.
- Research related to emergencies should be prioritized and the research should be incorporated at the planning phase of the emergency response.

Recommendations for priority actions

- Develop a multisectoral, multi-hazard health emergency management plan that includes an emergency risk and readiness assessment and preparedness and response plans at both national and intermediate levels.
- Develop a Health Sector Emergency Response Action Plan.
- Develop a range of HEOC-specific plans including but not limited to an emergency operations plan; a civil-military-specific plan; a strategic humanitarian response plan; and a business continuity plan.
- Develop SOPs for pre-deployment, deployment and post-deployment of RRTs and EMTs.
- Development protocols for rapid procurement and replenishment of emergency logistics.
- Build staff capacity for Public Health Emergency Management (PHEM) through training and national and international networking of trained personnel.

R2. Linking public health and security authorities



Introduction

Public health emergencies pose special challenges for law enforcement, whether the threat is manmade or naturally occurring. In a public health emergency, law enforcement will need to quickly coordinate its response with public health and medical officials.

Target

Country conducts a rapid, multisectoral response for any event of suspected or confirmed deliberate origin, including the capacity to link public health and law enforcement, and to provide timely international assistance.

Level of capabilities

Nepal has several strong legal frameworks that underpin the coordination mechanisms for disaster response. In previous events and disasters Nepal has demonstrated successful multisectoral response coordination, a strong grounding for good cooperation between health and security services. Clearer and more specific roles and responsibilities for different parties would allow Nepal to capitalize on its existing assets and achievements and define a clear action plan for such events.

From an operational perspective, there are SOPs for some government entities in documents such as the National Strategic Plan of Action on DRR 2018-2030, disaster preparedness and response plans at different levels of government, the National Disaster Response Framework, the SOPs of the National EOC and Health EOCs, and others. Again, clearer and more specific roles, responsibilities and SOPs for other different entities would further strengthen preparedness and response capacities.

Nepal has developed a very sophisticated and successful tool, BIPAD (Building Information Platform Against Disaster) for information sharing and reporting on disasters from all hazards – although security-related disasters are not yet addressed specifically by this tool.

From the perspective of coordination in disaster situations, the Chief District Officer has authority under the law to deploy security forces, for purposes from law enforcement to disaster and emergency management. Again, however, there is a need to clarify relevant roles and responsibilities by revising the existing Disaster Risk Reduction (DRR) Act and/or the Public Health Service act, or to bring in a new DRR Response Act.

Finally, for all disasters related to chemical, biological, radiological and/or nuclear (CBRN) hazards, the security forces – and particularly the Nepal Army – have the mandate to respond, as laid out in the Security Act. Based on good past practices, the Ministry of Home Affairs (MOHA) coordinates with the Ministry of Defence (MOD) in such situations, but this link still needs to be bound and underpinned in law.

Indicators and scores

R2.1. Public health and security authorities (e.g., law enforcement, border control, customs) linked during a suspect or confirmed biological, chemical or radiological event – **Score 1**

Strengths

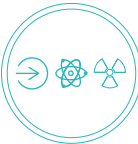
- Nepal has a National Council for Disaster Risk Reduction and Management chaired by the Prime Minister. The Council Executive Committee comprises ministers and secretaries from the MOHA and the MOHP.
- Committees have been formed at federal, provincial and local level to coordinate responses to disasters and public health emergencies.
- If the practices described in the first two points were formalized in a clear legal framework, the score on this indicator would be 3.
- There are provisions for health desks and quarantines at POE.
- Communication and information sharing occur regularly through the BIPAD portal and the release of situation reports. It is to be noted that the development of such a tool has a rating score of 5 on the JEE scale.
- Nepal has surge capability in relevant institutions to strengthen responses to disasters (although, while this is done in practice, it is not institutionally formalized). Such a surge response is expected from Member States rating 4 on the JEE scale.
- In the COVID-19 response, Nepal showed effective and organized and coordination of multiple stakeholders, including for the isolation/quarantine of infected individuals. If an equivalent were formalized, it would rate a score 4 on the JEE scale.
- The MOHP releases daily situation reports on diseases during emergencies.
- The BIPAD portal also updates on different hazards through the DRR Portal of the NEOC.
- Examples of previous experience, training and exercises include Army operations to rescue students from Wuhan; the Holding and Isolation Centres managed by Chief District Officers; hospital, ambulance and dead body management; a range of joint simulation exercises; and a civil security joint exercise. This example would rate 4 on the JEE scale and is a clear indication that Nepal has a very solid ground for building a strong formalized multisectoral response to suspected or deliberate events.

Challenges

- There is a need for a critical review of Nepal's existing legal framework and policies for managing disasters and public health emergencies, with the aim of incorporating all the lessons of the COVID-19 pandemic and past disasters.
- There is a need to define specific legal provisions and SOPs for all stakeholders to ensure accountability.
- Greater investment in technical competencies and resources for the institutions and individuals responsible for disaster management and public health would strengthen Nepal's resilience and capacity to respond. Problems with insufficient resources and technical expertise can hinder the implementation of existing policies and legal frameworks.
- Effective coordination is challenging, both during responses to disasters and emergencies and throughout the preparedness and recovery phases.
- Nepal has faced difficulties with shifting collective responsibility to sole responsibility.

Recommendations for priority actions

- Make necessary adjustments to existing legal provisions to ensure the creation of a multihazard, multisectoral Plan of Action that includes CBRN events and defines the specific roles and responsibilities of key stakeholders.
- Enhance resource planning to create a budget plan for upgrading the technical competencies of key government institutions and entities across sectors, including the National DRR and Management Authority, the EOCs, the Department of Hydrology and Metrology, Search and Rescue, diagnostic facilities and other relevant stakeholders in disaster and public health emergency preparedness.
- Develop an integrated, multisectoral capacity building programme for all-hazards risk management, involving stakeholders from all relevant sectors.



R3. Health services provision

Introduction

Resilient national health systems are essential for countries to prevent, detect, respond to and recover from public health events, while ensuring the maintenance of health systems functions, including the continued delivery of essential health services at all levels. Particularly in emergencies, health services provision for both event-related case management and routine health services are equally as important. Moreover, ensuring minimal disruption in health service utilization before, during and beyond an emergency and across the varied contexts within a country is also a critical aspect of a resilient health system.

Target

(1) Evidence of demonstrated application of case management procedures for events caused by IHR relevant hazards. (2) Optimal utilization of health services, including during emergencies. (3) Ensuring continuity of essential health services in emergencies.

Level of capabilities

The Constitution of Nepal mandates that every citizen has the right to free basic health services (BHS) provided by the state, and the Public Health Service Act 2018 and Public Health Service Regulation 2020 list the services that must be available. Standard treatment protocols for BHS and emergency health services (EHS) were published in 2021.

Six priority diseases have been identified for specific attention: three vector-borne diseases (malaria, kala-azar, and dengue) and three diseases with the potential to cause outbreaks (acute gastroenteritis, cholera, and SARI). Disease control and case management guidelines are available for each of these and for other important diseases, such as TB. Since 2019, further guidelines have been written and regularly updated for several aspects of COVID-19 management. Relevant stakeholders, including the MOHP, professional societies, and subject experts from academia, are engaged to develop evidence-based case management guidelines that are disseminated to all levels of healthcare provision.

In 2020/21, Nepal had 201 public hospitals, 189 primary health care centres, 3794 health posts and 2082 non-public healthcare facilities. The Public Health Service Regulation 2020 provides for health facility accreditation.

A minimum service standard (MSS) tool is used to assess the capability of public health posts and primary, secondary, and tertiary hospitals twice per year, with good coverage. An Integrated Health Information Management System (IHIMS) Roadmap 2022-2030 has been developed to digitalize the collection and analysis of data on health service utilization and performance. An annual report is published by the DOHS, and some of these data are already being used to plan activities.

Explicit consideration for continuity of BHS during emergencies is contained within the Health Sector Emergency Response Plan for the COVID-19 Pandemic, the Disaster Risk Reduction and Management Act 2017 and the Disaster Risk Reduction and Management Rules 2019.

There is strong evidence that some important areas of health service provision have been maintained despite the COVID-19 pandemic: for example, institutional deliveries as a percentage of expected pregnancies increased from 45.6% in 2016/17 to 64.9% in 2020/21, and national coverage for routine immunization has remained high for the last three years. However, patient attendance at hospital out-patient clinics dropped sharply in 2020/21.

Geographical barriers present a challenge in some parts of the country, and telemedicine tools are being developed to improve access to healthcare advice and services. Stronger referral systems are required to ensure population-wide provision of specialist care; ongoing progress is needed in the development of digital health information systems; and further work is needed to improve existing partnerships between public health services and other healthcare providers.

Indicators and scores

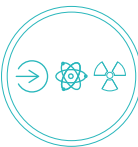
R3.1. Case management – Score 4

Strengths

- Clinical case management guidelines are available for BHS, EHS, six pre-defined priority diseases and other important components of health service provision.
- Clinical case management guidelines were developed in collaboration with relevant stakeholders and experts.
- Clinical case management guidelines are available (in soft and hard copy) at all levels of healthcare provision, and healthcare workers are well-orientated for their use.
- Mapping of necessary resources for case management of BHS has been undertaken at national, intermediate and facility levels.

Challenges

- While current priority health conditions have been selected, there is no strategic tool for risk assessment to determine when prioritizations should change.
- Case management guidelines take time to develop and approve, which can delay their implementation.
- There is no structured process for review and timely updating of guidelines. However, experience of the need to update COVID-19 guidance repeatedly in response to rapidly changing evidence shows that this can be done in emergencies.
- Stronger monitoring and evaluation systems are needed to ensure the provision of quality healthcare services in accordance with established guidelines.
- Referral mechanisms are in place so that patients with severe or complex illnesses can be transferred between facilities for specialist care. However, these pathways require strengthening, including with clearer indications for referral, improved logistics for patient transfer, and better communication between locations. It is important that referral systems work both under routine circumstances and during emergencies.



R3.2. Utilization of health services – Score 1

Strengths

- All three tiers of government in Nepal are involved in regulation and monitoring of the public and private hospitals in their respective jurisdictions.
- Health service assessment tools are in place and being used (i.e. the MSS tool twice per year, and social audits annually). The social audit tool includes feedback from service recipients to monitor public trust in the health system.
- MSS implementation is supported by an MSS resource person pool and monitoring software.
- The Integrated Health Information Management Section (IHMIS) is in place.
- Data collected from routine health management information systems are presented to responsible authorities during national joint annual reviews and published in the DOHS Annual Report. These data are disaggregated by geographical area, gender, and whether they come from public or private facilities.
- Initiation of telemedicine services, including software development and orientation at provincial level, is expanding access to healthcare.

Challenges

- 26 843 366 outpatient department (OPD) visits were reported in 2020/21 (DOHS Annual Report) from a total population of 29 192 480. At less than one OPD visit per person per year, this suggests very low levels of health service utilization.
- However: it is known that under-reporting of OPD utilization, including at private health facilities, has affected these data, and there is currently no provision for reporting from some services (e.g. telemedicine). There is therefore a need for more comprehensive reporting systems, preferably delivered by promotion of digital health systems.
- Digital health information systems require application programming interfaces to enhance the interoperability of data from different platforms and sources and ensure that essential analyses can be conducted without imposing additional collection burdens on healthcare facilities and workers.
- An electronic health records system should be developed as a component of the IHMIS Roadmap 2022-2030.
- While MSS coverage is good, it requires expansion to all facilities at every level, and there is currently no clear mechanism to promote implementation of recommended actions from the assessments.
- Timely analysis and dissemination of information on health service utilization is required to identify and respond to disruption of services at all times, but particularly during emergencies.

R3.3. Continuity of essential health services (EHS) – Score 4

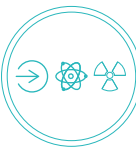
Strengths

- Clear definitions of the BHS and EHS packages are referenced in relevant acts and regulations, with explicit consideration of the need for continuity during emergencies.
- Social Service Units (SSU) and One-Stop Crisis Management Centres (OCMC) are functional in hospitals across the country to ensure access to care for marginalized and vulnerable populations, including those subjected to gender-based violence. National health insurance premiums for marginalized and elderly people are paid by the government.
- The federal government allocates a budget to local levels for BHS, and monitoring is done by all three tiers of government.

- Health facility assessments continue during emergencies. A rapid assessment of 21 COVID-19 unified hospitals conducted during the peak of the second wave of the COVID-19 pandemic showed that all had identified and prioritized essential health services and included provision for service continuity. Information management systems were present in 20 of those hospitals to monitor essential health service utilization.

Challenges

- There is a need for regular simulation and tabletop exercises along with post event reviews to test plans and guidelines, ensure their successful implementation, and facilitate timely updates.
- Multisectoral partnerships should be strengthened across all key stakeholders (including the Nepal Army, the Armed Police Force, the Nepal Police, academic hospitals, and private healthcare providers) to ensure that all capabilities can be mobilized to preserve continuity of services during emergencies.
- Even within priority services, continuity of some activities may be considered essential during emergencies, while others may be deferred. Definitions of essential activities are needed within and between services.
- While service and assessment mechanisms are in place, they are scattered across different divisions of the DOHS. Coordination may be improved by development of common approaches.



Recommendations for priority actions

- Develop a strategic tool for further risk assessment in order to define and update the list of priority conditions.
- Strengthen the referral mechanism for routine health care and emergencies by developing referral guidelines and an implementation plan.
- Strengthen the reporting system from health facilities, including private health facilities, clinics and teleconsultation services, by promoting use of the digital health system.
- Improve the operationalization of MSS by expanding its use to all healthcare facilities, and promote the implementation of the recommended actions from the MSS assessments.
- Explore mechanisms for strengthening partnerships between key stakeholders during routine health care and emergencies, in order to ensure that essential health services are maintained.

R4. Infection prevention and control

Introduction

To have strong, effective infection prevention and control (IPC) programmes that enables safe health care and essential services delivery and prevention and control of health care acquired infections (HCAIs). It is critical to initially ensure that at least the minimum requirements for IPC are in place, both at the national and facility level, and to gradually progress to the full achievement of all requirements within the WHO IPC core components recommendations.

Target

(1) National IPC programme strategy has been developed and disseminated. (2) Implementation of the national IPC programme plans, with monitoring and reporting of HCAIs. (3) Established national standards and resources for safe health facilities.

Level of capabilities

The emergence of AMR has made health care associated infections (HCAIs) increasingly difficult to treat. AMR is spreading and is associated with prolonged hospital stays, increased sequelae and high mortality. HCAI and AMR are public health challenges in Nepal.

A recent study on the burden of sepsis and AMR in Nepal estimates that 55 803 people died of sepsis in the country in 2019, and in about 50% of sepsis fatalities the pathogens were antimicrobial resistant (<https://vizhub.healthdata.org/microbe>). These numbers underline the importance of infection prevention and control (IPC) to stop further transmission within and outside healthcare services. Reducing the incidence of infection through effective IPC is one of five strategic priorities in Nepal's national AMR action plan.

Nepal held a National Symposium on Infection Prevention and Control in July 2022 to pave the way for the first National Guideline on IPC. This brought together key stakeholders from academia, the health sector and the government to discuss best practices, challenges, and proposed action points to improve IPC in Nepal. The symposium was organised by the Nursing and Social Security Division of the DOHS with support from WHO, and succeeded in gathering feedback on a draft national IPC guideline. It also produced a recommendation to establish a comprehensive IPC programme with an IPC framework and an appropriate budget.

Within the heterogeneous Nepalese hospital sector, 15 hospitals and health facilities have IPC manuals or guidelines in use. More than 60 IPC nurses have been trained through a national programme and are now working as IPC focal persons in their respective federal and provincial hospitals. Basic IPC training has been conducted all over the country, focussing on healthcare workers in basic and district level hospitals.

A few Nepalese hospitals have HCAI surveillance programmes, but so far the data is not collected and connected to national surveillance programmes. AMR surveillance has recently been established, which may allow for connection to HCAI surveillance and enable connection to EWARS.

Another target that Nepal has worked on is the establishment of safe environments in health facilities through provision of water, sanitation and hygiene (WASH) facilities, access to PPE and disinfectants.

According to the 2021 Health Facility Survey, 94.1% of health facilities in Nepal have improved water sources, a great improvement in comparison to previous estimates. The survey also showed that the availability of alcohol based disinfectants has increased (for example, availability in delivery and newborn settings increased from 32% to 92% in a sample of Nepalese hospitals). But soap and running water should be available in all health care facilities, and together these were only available in 79% of facilities where delivery and newborn care were performed.³

Single health care facilities, teams and individuals have shown how to improve IPC in Nepal and have thereby increased patient health and safety. Now it is time to take this progress to a national level, so that a strong IPC programme with a clear focus on hand hygiene can be put in place to increase patient health and safety all over Nepal.

Indicators and scores

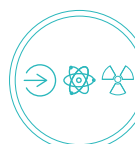
R4.1. IPC programmes – Score 2

Strengths

- The Nursing and Social Security Division has drafted national IPC guidelines, which were in the MOHP approval process at the time of the JEE.
- A National IPC Guideline and a National IPC Manual have been developed. The manual addresses standard and transmission-based precautions and other core components of IPC.
- There is collaboration between the MOHP, professional societies, professional councils, the National Health Training Centre (NHTC) and relevant programme divisions to deliver training programmes, guidelines, research, and academic conferences.
- Different medical training programmes have integrated IPC components.
- IPC committees are already functioning in some hospitals, and some hospitals have an IPC manual and/or guideline and a designated IPC focal person in place to monitor the implementation of IPC guidance in their hospital.
- A health facility IPC assessment has been conducted and an action plan has been prepared accordingly.
- Onsite coaching and mentoring for improving IPC practices are established in some hospitals.
- Sixty-nine health care workers have been trained through a three-month IPC training course and are now working as IPC focal persons in their respective federal hospitals.
- Basic IPC training is conducted all over the country by the NHTC.

Challenges

- Dedicated personnel and budget support are needed to execute the national IPC programme and strengthen IPC at national and regional levels.
- The current focal unit needs to be strengthened with defined TOR and a clear mandate.
- Many healthcare professionals have insufficient knowledge of good IPC practices. There is a need to increase awareness of the importance and cost-effectiveness of IPC and build a case for investment in reducing HCAI.
- Regular supervision is needed at hospital level, together with monitoring of the implementation of national IPC guidelines and manuals.
- Coordination between provincial and local levels, and also directly with health facilities, is challenging and underlines the need for dedicated IPC staff and budgets.



³ Ministry of Health and Population, Nepal; New ERA, Nepal; and ICF. 2022. Nepal Health Facility Survey 2021 Final Report. Kathmandu, Nepal: Ministry of Health and Population, Kathmandu; New ERA, Nepal; and ICF, Rockville, Maryland, USA

R4.2. HCAI surveillance – Score 2

Strengths

- Establishment of HCAI surveillance is a core component of the drafted IPC guideline and the AMR action plan.
- The NPHL is already conducting AMR surveillance that includes some priority pathogens causing HCAI. This AMR surveillance is conducted in 25 sentinel sites, 24 of which are associated with hospitals.
- A few hospitals have already established HCAI surveillance.

Challenges

- Development of a strategic action plan for HCAI surveillance, with staff and an allocated budget, will be prerequisites of establishing functioning HCAI surveillance.
- HCAI surveillance has not been implemented at different levels of health care facilities. This is needed to gather data on HCAI at national level and improve the knowledge base so that stakeholders are better informed on the needs for IPC.
- Linking HCAI surveillance with the IHMIS, existing AMR surveillance systems and EWARS will be an additional challenge.

R4.3. Safe environment in health facilities – Score 2

Strengths

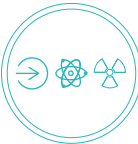
- The majority (an estimated 94.1 %) of health care facilities have improved water sources.
- All health facilities have a designated isolation room.
- The majority of health care facilities (82.3%) have sterilization facilities.
- Relevant SOPs are available, including the Health Care Waste Management SOP 2020 and the Environmental Health Care Waste Management, Water Sanitation and Hygiene Pocketbook.
- WASH is regularly assessed by the DOHS.
- Hand hygiene compliance monitoring is conducted in some hospitals.
- Trainings on IPC and environmental health, health care waste management and WASH have been conducted regularly through the NHTC.
- A WASH standard is endorsed and implemented.
- A national health care waste management roadmap is being drafted.

Challenges

- Regular assessment, onsite monitoring and supervision of all hospitals has been difficult to establish.
- Coordination among different stakeholders is poor.
- The Nepal Health Facility Survey 2021 indicated that not all all health care services yet provide WASH facilities with available soap and disinfectants.

Recommendations for priority actions

- As soon as possible, ensure availability of basic infrastructure and supplies to assure patient and staff safety from infection in all health care facilities.
- While seeking formal endorsement of the existing IPC Action Plan by the MOHP, accelerate its implementation at the operational level.
- Building on the recommendations of the 2019 national IPC assessment, develop, finalize and endorse a comprehensive National IPC Framework that includes:
 - » a national IPC committee with clear TORs;
 - » dedicated staff and/or a unit for national and regional implementation of the IPC programme;
 - » a dedicated budget for activities outlined in the National IPC Framework at both national and subnational level;
 - » regular monitoring and feedback of IPC-related activities; and
 - » consideration of including or aligning with arrangements for infection control for animal health.
- Develop a comprehensive plan to commence HCAI surveillance in selected federal hospitals by the end of 2023; secure the necessary resources and implement it; then proceed stepwise to include provincial and local level hospitals by 2030. This plan should include connecting HCAI surveillance to existing AMR surveillance and linking it to EWARS, MPDSR and IHMIS; and establishing a national system of data collection and analysis.
- Based on assessed needs, expand capacity building activities through:
 - » training healthcare workers and support staff;
 - » a skills exchange programme starting in 2023; and
 - » strengthening hospitals to become centres of excellence for IPC and patient safety by 2030.



R5. Risk communication and community engagement

Introduction

Risk communications should be a multilevel and multifaceted process which aims at helping stakeholders define risks, identify hazards, assess vulnerabilities and promote community resilience, thereby promoting the capacity to cope with an unfolding public health emergency. An essential part of risk communication is the dissemination of information to the public about health risks and events, such as disease outbreaks. For any communication about risk caused by a specific event to be effective, the social, religious, cultural, political and economic aspects associated with the event should be taken into account, including the voice of the affected population.

Target

States Parties use multilevel, multisectoral and multifaceted risk communication and community engagement (RCCE) capacity for public health emergencies. Real-time exchange of information, advice and opinions during unusual and unexpected events and emergencies so that informed decisions to mitigate the effects of threats, and protective and preventive action can be made. This includes a mix of communication and engagement strategies, such as media and social media communications, mass awareness campaigns, health promotion, social mobilization, stakeholder engagement community engagement and infodemic management.

Level of capabilities

Risk communication and community engagement (RCCE) are well structured and organized within the MOHP. The National Health Education, Information and Communication Centre (NHEICC) is the apex body under the MOHP for planning, implementing, monitoring and evaluating Nepal's health promotion, education and communication programmes generally and during emergencies.

The functional framework for RCCE is laid out in the Risk Communication and Community Engagement Directive 2021, which is established based on the Public Health Service Act 2018. The MOHP has also developed and implemented communication strategies as part of the Health Sector Emergency Response Plan for the COVID-19 Pandemic. The National Disaster Risk Reduction and Management Plan (NDRRMP 2011-2028) addresses development of guidelines on communications and information protocols before, during and after disasters.

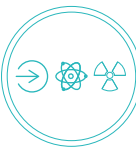
There are well-established RCCE activities and enhanced coordination among stakeholders and experts at federal level. Capacity building is being done for RCCE focal points at provincial level, and partially at local level as well. This will support proactive engagement at different levels with the media, radio, TV, social media and local communities.

Public communication activities are well established by the NHEICC, in collaboration with the Ministry of Information and Communication Technology and other media partners, to support the dissemination of core content through radio, television and print material in emergencies.

The MOHP has a spokesperson and a joint spokesperson to be its face and voice and inform the public about key issues during emergencies. These spokespersons play a key role, conducting weekly national

briefings via national television. The frequency of the briefings changes according to the need and situation (during the early days of the COVID-19 pandemic they were daily).

During the pandemic the government, with support from partners, established mechanisms to monitor mass media, social media, hotlines (Call Centres 1115 and 1133), press clips and offline discussions. There were community dialogue sessions, conducted through radio journalists, to monitor rumours and misinformation, which were then addressed through weekly media briefings. Key technical content was developed and shared through different platforms including an MOHP Viber group, government and stakeholders' social media platforms, and wider sharing with members of the RCCE interagency group.



Indicators and scores

R5.1. RCCE systems for emergencies – Score 2

Strengths

- Nepal has a structured RCCE framework and mechanisms for implementing RCCE with identified budget lines. The framework establishes clear roles and responsibilities of coordinators at federal RCCE units, which facilitate well-coordinated RCCE functions at all levels of governance during public health emergencies.
- There is strong collaboration among stakeholders within the health system and with partner agencies, with regular participation of RCCE focal points at national ICS meetings, and collaboration with international stakeholders via platforms such as health cluster meetings.
- RCCE capacity building is provided for health officials and other stakeholders.
- A three-day training course has been provided for 290 RCCE focal points from district level health offices and local level RCCE officials/health coordinators across the country.
- Other regular disaster and emergency trainings also include RCCE components (e.g. RRT and EMDT training).
- An advocacy programme with parliamentarians and elected local officials was conducted across all seven provinces during the COVID-19 pandemic.

Challenges

- The limited availability of trained human resources at all levels is a major obstacle to scaling up RCCE activities.
- There are challenges with the unavailability of standard learning resource packages for identified RCCE components such as infodemic management and community engagement.
- There is a lack of adequately trained personnel for infodemic management, social media, behavioural surveillance, etc.
- RCCE is hampered by a general lack of resources, tools, technology and ICT equipment.
- There is an ongoing requirement to test the capacity of RCCE at national and subnational level through simulation exercises.

R5.2. Risk communication – Score 2

RCCE capacity in the human health sector merits a level 3 score considering the organizational structure and risk communication activities conducted over the last few years; but RCCE capacity in the animal health sector is more limited, so the consensus overall score for this indicator is 2.

Strengths

- There is good internal communication with partner organizations through regular meetings of the RCCE Working Group.
- Updates on RCCE activities are shared across different geographical and thematic areas to identify best practices and challenges.
- The RCCE working group is leveraging its capacity to amplify information and communication products .
- Work is being done to identify gaps and improve coordination for joint RCCE interventions (e.g. mask and vaccination campaigns, etc.).
- Nepal has a well-developed public communication mechanism through mainstream media, social media channels and grassroots volunteer health workers.
- Partnerships with state media agencies, private media institutions and telecommunications agencies are leveraged for rapid public communication.
- Partnerships with telecommunications and phone service providers are used to disseminate important health information during emergencies via SMS, call back ringtone messaging, etc.
- There is good coordination with the Ministry of Communication, Information and Technology and the Advertisement Board for disseminating messages via national platforms.
- Good collaboration with the Hotel Association of Nepal, the Association of Schools, business houses and other industry and sectoral bodies are used to amplify important health messages, government circulars, protocols, etc.
- There is good collaboration with celebrities and influencers to strengthen risk communication, gain public trust, promote healthy behaviour, support social cohesion and help combat stigma.
- A social listening mechanism has been established to monitor public perception and identify public concerns, information voids, unfounded beliefs, dangerous health behaviours etc.
- Behaviour and insight surveys are conducted regularly during health emergencies, with the support of partner agencies.
- Rumours and misinformation are addressed in real time through national press briefings and other channels of communication.

Challenges

- Dedicated funds for RCCE are limited, especially during public health emergencies.
- While the NHEICC is the nodal agency for RCCE, it does not have adequately trained RCCE personnel for more specialized activities such as behaviour surveillance, social media, social listening, disability appropriate communication methods, etc.
- There are limited channels for social listening and this activity relies on a small number of existing tools. There is a need for more up-to-date technology and skillsets, and to emphasize direct public outreach and community engagement.

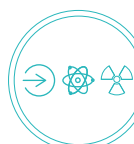
R5.3. Community engagement – Score 2

Strengths

- An expanded network of more than 50 000 Female Community Health Volunteers (FCHV) across the country conducts regular health education and health promotion in every community throughout the country. Female Community Health Volunteers are also mobilized during emergencies for RCCE activities (for example, to promote public health and social measures during the COVID-19 pandemic).
- Existing networks are used to engage with communities via the RCCE Interagency Working Group.
- The RCCE Interagency Working Group works with affected populations throughout the preparedness and response phases by establishing a two-way feedback system through social listening, hotline services, perception surveys and radio and TV programmes.
- There is good engagement with elected officials and local leaders.
- There is good sensitization of elected officials and parliamentarians on their roles in institutionalizing RCCE mechanisms, building trust, mitigating stigma in their communities and advocating appropriate health messages, behaviour, campaign messaging, etc.
- Effective partnerships are in place with local organizations such as the Red Cross, the Scouts, and volunteers.

Challenges

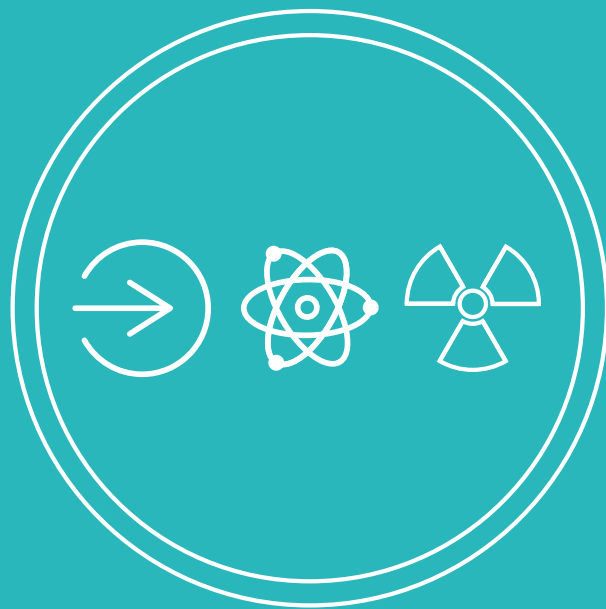
- There is a need to scale up community engagement in hard-to-reach populations, minority groups and marginalized populations, and across the digital divide.
- There are challenges around limited capabilities and skillsets to assess the strength, form and quality of community engagement with target communities before, during and after emergencies.
- The community engagement coordination mechanism is in its infancy at national and sub-national level, and is not strong.
- Expertise and resources are inadequate for extensive community engagement, and/or to design provincial and local emergency response initiatives.
- There is no effective mechanism for exchanging feedback with vulnerable and/or marginalized communities.
- There is a need for information and a database on the risks faced by different populations and their levels of resilience to different hazards.
- There is a need for mapping of community and civil society organizations as a basis for building more and better partnerships for community engagement activities.



Recommendations for priority actions

- Strengthen pre-service and in-service training programmes for all relevant stakeholders (including those outside the health sector) to enhance risk communication and community engagement.
- Strengthen the RCCE system for emergency response at central, provincial and local levels by ensuring access to sufficient competent staff and appropriate technology and equipment.
- Develop a mechanism to guide and inform evidence-based infodemic management, which includes but is not limited to interventions such as behavioural insight research, surveys, focus group discussions and social listening.
- Strengthen existing mechanisms and platforms to facilitate coordination and collaboration between different RCCE stakeholders, and establish new ones where necessary. Develop SOPs that clearly define the roles and responsibilities of different stakeholders during emergencies.

IHR RELATED HAZARDS AND POINTS OF ENTRY AND BORDER HEALTH



PoE. Points of entry and border health

Introduction

All core capacities and potential hazards apply to “points of entry” and thus enable the effective application of health measures to prevent international spread of diseases. States Parties are required to maintain core capacities at designated international airports and ports (and where justified for public health reasons, a State Party may designate ground crossings), which will implement specific public health measures required to manage a variety of public health risks.



Target

States Parties designate and maintain core capacities at international airports and ports (and where justified for public health reasons, a State Party may designate ground crossings) that implement specific public health measures required to manage a variety of public health risks.

Level of capabilities

Nepal is a landlocked country that borders India to the east, south and west, and China to the north.

Nepal has two international airports and 16 ground crossings. Fourteen of these crossings are along the border with India, and two are on the border with China. Discussions in the JEE meetings also referred to several further unofficial (and porous) ground crossings.

In line with IHR Article 20 and Annex 1 on the core capacities to be implemented at IHR-designated points of entry, Nepal has designated only one point of entry: Tribhuvan International Airport (TIA) in Kathmandu.

A series of Integrated Check Posts (ICPs) has been created on the land border between India and Nepal. These ICPs house customs, immigration, and border security authorities working to facilitate the movement of passengers and freight between the two countries. The Nepalese public health authorities might consider following the example of its fellow authorities and entering into bilateral agreements with their Indian neighbours in order to facilitate and strengthen compliance with IHR Articles 21 and 57 (concerning joint prevention and control of international transmission of diseases at adjacent ground crossings shared by neighbouring countries).

In Nepal the “competent authority” at points of entry, as described by IHR Articles 1 and 22, comprises public health staff who report to two different sections within the Epidemiology and Disease Control Division (EDCD) at the MOHP. The team at ground crossings reports to the Epidemiology and Outbreak section, while airport staff report to the Zoonotic Diseases and other Communicable Diseases section.

The Civil Aviation Authority of Nepal (CAAN) has developed a National Aviation Public Health Emergency Preparedness Plan on Communicable Diseases. This national plan paves the path for the Tribhuvan Airport Public Health Emergency Contingency Plan, which was in its last stage of development and finalization at the time of the JEE and will be incorporated within the aerodrome emergency plan.

The multisectoral governmental body in charge of designing and implementing measures related to international travel is the technical committee under the Prime Minister's Secretary.

Nepal requires a yellow fever vaccination certificate for travellers coming from countries with a risk of yellow fever transmission, and proof of polio vaccination with an International Certificate of Vaccination for travellers coming from countries with a risk of polio transmission.

Entry into Nepal still requires proof of complete vaccination against COVID-19 or a negative report of a COVID-19 test (RT-PCR, GenExpert or True NAAT) obtained within 72 hours of travel.

Indicators and scores

POE1. Core capacity requirements at all times for POE – Score 3

Strengths

- A risk assessment has been conducted at TIA.
- A multisectoral risk assessment of six ground crossings along the Nepal-India border has also been performed, based on measurable criteria of three indicators (identification of hazards and risk analysis; water, sanitation and hygiene (WASH); and protection of stakeholders and at-risk groups).
- A comprehensive assessment checklist has been developed for health desks at ground crossings.
- There is good collaboration between public health authorities and the CAAN, including joint management of aviation safety risks related to COVID-19 at Nepali airports, and implementing the International Civil Aviation Organization's COVID-19-related Council of Aviation Recovery Take-off guidance (CART).
- The public health authority at Tribhuvan airport is a member of the airport's facilitation and security committees.

Challenges

- Establishing MOUs between the MOHP and the MOALD would formalize collaboration and information sharing between public health authorities at borders and animal border quarantine checkpoints.
- Nepal should consider entering into bilateral or multilateral agreements at ground crossings with neighbouring countries to prevent and control the international transmission of disease in line with the provisions of the IHR.
- Coordination between POE and the national surveillance system could be strengthened by establishing criteria for reporting, detection procedures, contact tracing, information flow circuits, and electronic data transmission.
- There is a need to enhance the involvement of public health authorities in routine activities prescribed by the IHR such as inspection visits, verification, sampling and lab confirmation, data collection, and sanitation and hygiene education and promotion. These activities include food and water safety, waste management and vector control, and are currently managed by the DFTQC and the CAAN at airports, and by the respective municipalities at ground crossings.

POE2. Public health response at POE – Score 2

Strengths

- Quarantine facilities for imported animals have been established under the Animal Quarantine Offices to prevent transboundary spread of animal diseases.
- All the necessary materials and equipment are available to apply entry and/or exit controls for arriving and departing travellers, including PPE, thermal cameras and an isolation room.
- The MOHP and the CAAN make ambulances available at POE.
- The public health authority is a member of the TIA Emergency Operations Centre (EOC), and participates in simulation exercises set up and run by the airport.

- The CAAN has developed a National Aviation Public Health Emergency Preparedness Plan and a guidance document for airlines, airports, and ground services for operations during COVID-19.
- Proof of polio and yellow fever vaccination are required from travellers from affected countries.

Challenges

- Nepal should complete the development and validation process of the airport's Public Health Emergency Plan and its incorporation within the airport emergency plan.
- There is a need for airport SOPs for the detection, health assessment, notification and referral to healthcare facilities of suspected ill travellers.
- Nepal would benefit from institutionalizing collaboration and communication between public health authorities at borders and the animal border quarantine check posts.
- There is a need for customized training for public health personnel at POE that covers the IHR requirements.

POE3. Risk-based approach to international travel-related measures – Score 2

Strengths

- The multisectoral governmental body in charge of planning and developing strategies for measures related to international travel is the Technical Committee under the Secretary of the Prime Minister.
- The Technical Committee brings the health sector together with all other relevant stakeholders.
- The Technical Committee receives information from the National Emergency Operation Committee and recommendations from the IHR Committee.
- During the peak of COVID-19, the Technical Committee coordinated with the COVID-19 Crisis Management Centre.

Challenges

- Development of a strategy, relevant guidelines and SOPs would facilitate the implementation of international travel measures and establish capacity to adapt and adjust them.
- Nepal would benefit from adopting a proportionate, risk-based approach to the adaptation and adjustment of travel measures.
- There is a need to evaluate the effectiveness of international travel-related measures in response to public health events based on data related to travellers' mobility at POE and gathered at national, regional, and local levels.



Recommendations for priority actions

- At designated points of entry:
 - » complete the development and validation of the airport's Public Health Emergency Plan and incorporate it into the Airport Emergency Plan;
 - » develop airport SOPs for detection, health assessment, notification and referral to healthcare facilities of suspected ill travellers; and
 - » enhance routine activities including food and water safety, waste management and vector control, to align them with IHR requirements and WHO guidelines.
- Strengthen coordination between POE and the national surveillance system by establishing criteria for reporting, detection procedures, contact tracing, information flow and electronic data transmission.
- Consider empowering the POE programme by specifying its place in the MOHP organizational chart and allocating all resources necessary to fulfil IHR requirements at POE.

CE. Chemical events

Introduction

Timely detection and effective response of potential chemical risks and/or events requires collaboration with other sectors responsible for chemical safety, industries, transportation and safe disposal. This would entail that State Parties need to have surveillance and response capacity to manage chemical risk or events and effective communication and collaboration among the sectors responsible for chemical safety.

Target

States Parties with surveillance and capacity for chemical risks or events. This requires effective communication and collaboration among the sectors responsible for chemical safety, including health, occupational health, emergencies, environment, transportation and safe disposal, agriculture/veterinary, as well as industries.

Level of capabilities

Nepal has had no national chemicals profile or other assessment of chemical management developed or updated in the past five years – although the MOPH and the Ministry of Agriculture and Livestock Development have a list of pesticides and drugs used in their relevant sectors. In addition, under the Environment Protection Act 2053, all industries that produce toxic chemicals and/or toxic waste are obliged to declare them in the Nepal Gazette (the official journal).

From a public health perspective, the impact of chemical risks on morbidity and mortality have not been assessed for priority chemicals in the past five years, although various tertiary hospitals do report cases of pesticides misuse and poisoning.

In June 2019, with support from WHO, the EDCD organized and held a “Stakeholders meeting on Management of Health Emergencies” related to chemical hazards (while stressing the importance of multisectoral collaboration on this topic). This meeting was the first of its kind in Nepal.

From a risk assessment perspective, even though Nepal has not suffered any major chemical incidents in the past five years, 60% to 80% of the population is involved in the agricultural sector, where the use of pesticides and fertilizers is constantly increasing. In addition, toxic chemicals that are meant for agriculture have been frequently misused, mainly in cases of suicide, highlighting the risks inherent in the agricultural industry in its current form. The textile industry is the other large industry in Nepal that stores and uses toxic chemicals.

These two sectors have no clear provisions for monitoring and surveillance of toxic chemicals at national level – although there is a practice at facility level in concerned industries to monitor to some extent the volumes of relevant hazardous chemicals in use.

Nepal is member of the Strategic Approach to International Chemical Management (SAICM) policy framework, which promotes chemical safety through sound use and management of chemicals.

The Nepalese government has ratified the main international agreements related to safe use, storage, and transport of toxic chemicals. In addition, at the national level several relevant legal frameworks have been put in place and implemented (e.g. the Poison and Other Dangerous Chemical Substance Act, which was implemented in 2020). However, these acts and action plans do not cover the management of major chemical incidents.

Indicators and scores

CE1. Mechanisms established and functioning for detecting and responding to chemical events or emergencies – **Score 2**

Strengths

- The Nepal Army has a dedicated CBRN platoon.
- The Nepal Drug and Poison Information Centre (NDPIC) operates a dedicated hotline for poison and drug information.
- Nepal has a training programme for healthcare professionals on clinical toxicology.
- The NDPIC has trained over 500 healthcare professionals on the various aspects of clinical toxicology.
- Once this strength in clinical toxicology is integrated into an holistic response plan, Nepal will be at a rating of 3 on the JEE scale.
- The NDPIC provides valuable information on poisons, drug interactions, insect- and/or snakebites, and chemical exposure.
- Numerous national acts and guidelines relate to pesticide management.
- A preliminary draft of a national CBRN strategy has been prepared.
- An initial concept note on CBRN security has been prepared, and further studies and improvements have been carried out.

Challenges

- Nepal needs to develop and implement a national chemical emergency strategy that clarifies the roles, responsibilities, and accountability of all stakeholders.
- There is a need for integrated national capacity based on an exercise to identify areas of national priority.
- There is a need for greater cooperation with international partners, including integrated training and exercises.
- Implementation and capacity building of the Chemical Unit are challenging.
- Other challenging technical areas have included surveillance and monitoring of chemical hazards; resource and risk mapping; and setting up lab facilities to cover all risk areas.
- Staff competencies at primary health care level limit the ability to respond rapidly to chemical emergencies.

CE2. Enabling environment in place for management of chemical events – **Score 1**

Strengths

- The Acid and Other Hazardous Chemical Substances (Regulation) Act was implemented in 2022 and has opened the door to progressive activity in this field.
- Nepal has ratified international chemicals conventions/agreements including the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals in International Trade; the Stockholm Convention on Persistent Organic Pollutants; the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal; and the Minamata Convention on Mercury.
- The Acid and Other Hazardous Chemical Substances (Regulation) Act provides for central and district committees for control of acids and other hazardous chemicals, which can move this area forward.
- Nepal has banned certain pesticides and has inventory and tracking systems for imported pesticides.



- A ministerial decision in 2003 specifies 23 precursors that need to be approved by the Drug Control Section of the MOHA before import, and 10 other chemicals that need to be approved by the MOFA. This capability rates a 3 on the JEE scale.

Challenges

- Nepal needs a strategic plan for a national chemicals profile (hazard mapping).
- Nepal needs a public health plan for chemical incidents or emergencies.
- Nepal needs a multisectoral, interdisciplinary coordination mechanism for chemicals management and a central database or databank for chemical events.
- There is a need for advocacy in high-risk areas to emphasize the importance of testing chemical event response plans through simulation exercises.
- Nepal has no mechanism to monitor contaminated entrants at POE.
- Nepal has no dedicated budget for health emergencies of chemical origin.
- There are no dedicated health emergency management centres for mass chemical hazards.

Recommendations for priority actions

- Develop a multisectoral disaster management plan for chemical emergencies that clarifies the roles, responsibilities, and accountability of all stakeholders and focuses on risk mapping and surveillance (expected timeline: three years).
- Ensure that the Plan establishes the roles of CBRN responders and specific healthcare facilities in the diagnosis and treatment of chemical events, and links with the MOPH (expected timeline: 1.5 years).
- Develop protocols and/or guidelines for case management with regard to chemical hazards (expected timeline: 3.5 years).
- Increase human resources to meet the needs for managing chemical events, and increase cooperation and integrated training and exercises with international partners (expected timeline: five years).

RE. Radiation emergencies

Introduction

To counter radiological and nuclear emergencies, timely detection and an effective response towards potential radiological and nuclear hazards/events/emergencies are required in collaboration with sectors responsible for radiation emergency management.



Target

States Parties should have surveillance and response capacity for radiological emergencies and nuclear accidents. This requires effective coordination among all sectors involved in radiation emergencies preparedness and response.

Level of capabilities

In Nepal, the use of radioactive substances is limited to small quantities in medicine, research, and industry. While the existence of some nuclear material ore deposits has been reported, commercial mining is non-existent in pragmatic terms. As of early 2018, 48 organizations in Nepal possessed radioactive sources, distributed across medical centres (in eight locations), research centres (nine), and academic institutions (31).

Radioisotopes identified in the country are used in radiotherapy (Co-60, Ir-192); nuclear medicine (Tc-99, I-131); academic institutions (Co-60, Cs-137, Sr-90, Po-210, Ti-204); research centres (Cs-137, Sr-90, Am-241); and the Department of Mines and Geology (samples of uranium, thorium and potassium).

Nepal has a long history of medical radiology dating back to 1923, but there is still a widespread lack of occupational radiation protection infrastructure to control the use of ionizing radiation in the medical and other relevant fields. There is also a lack of proper management of solid radioactive emitting devices.

Nepal has experienced no major radiation emergencies in the past.

There have been no radiation safety assessments in the past five years.

Nepal has conducted no baseline public health assessments regarding radiation safety (for example, considering morbidity and mortality) in the past five years.

Mechanisms for detecting and responding to radiological and nuclear emergencies are not completely established and fully functioning. Nepal has a Radioactive Material (Usage and Regulation) Act 2020, on the basis of which the Radioactive Material (Usage and Regulation) Regulations were developed in 2021. The Act was intended to ensure the safe and peaceful usage of radioactive material and technology and its proper use in education and innovation, and to protect citizens and the environment from the unfavourable impacts of ionizing radiation.

The Nepali Army is developing a CBRN Disaster Management Plan that will include radiation emergencies.

No coordination and communication mechanisms are in place between national authorities responsible for radiological and nuclear events, the MOHP and/or the IHR NFP.

There is no authority, institute or agency with primary responsibility for radiation and surveillance/monitoring. Section 4 of the Radioactive Material (Usage and Regulation) Act provides for the existence of a regulatory body under the Ministry of Education, Science and Technology, which shall appoint a team to monitor and ensure that the Act has been followed.

The Nepal Academy of Science and Technology has been designated as responsible for providing dosimetry services in Nepal since November 2016.

Indicators and scores

RE1. Mechanisms established and functioning for detecting and responding to radiological and nuclear emergencies – **Score 1**

Strengths

- The formulation of the Radioactive Material (Usage and Regulation) Act 2020 has opened doors to a more progressive national approach to radiation emergencies.
- Calibration and dosimetry equipment have been in use in medicine, at research centres, in mining and in the food and drug administration.
- A security system has been installed with the help of the US government DNN Proliferation Radiological Security Program (DNNRSP) at NAMS, Bir Hospital, and other hospitals using radioisotopes.
- There is a national inventory of radioactive material (at the Central Department of Physics, Tribhuvan University).
- Nepal started the International Atomic Energy Agency (IAEA) technical cooperation project in 2016 to improve national preparedness for radiation emergencies.
- A new project, submitted to IAEA for the 2020/2021 project cycle, establishes a national post-academic programme in medical physics and clinical training in Nepal.
- A stakeholders meeting on radiation emergencies was held in Kathmandu in May 2018, and stressed the importance of multisectoral collaboration.
- Occupational radiation monitoring using external dosimetry has been conducted among more than 500 radiation workers residing in Kathmandu.

Challenges

- Robust national policies, strategies or plans for radiation emergencies are needed.
- There is a need to strengthen cooperation with the public health sector for development and dissemination of SOPs.
- There is a need for radiological surveillance, monitoring and detection equipment.
- Training programmes for emergency responders are not available in Nepal.
- There is a need to strengthen human resources for radiation emergencies, both in number and in capability.
- There is a need to designate emergency health care facilities for radiation emergencies.
- Laboratories are needed for individual dose assessment and monitoring.
- Nepal lacks radiation emergency medicine facilities with appropriate equipment.
- Action plans for radiation emergencies with appropriate SOPs are needed in each institution in Nepal that handles radioactive sources.
- Budgets for radiation emergency preparedness are inadequate.

RE2. Enabling environment in place for management of radiological and nuclear emergencies – Score 1

Strengths

- Section 4 of the Radioactive Material (Usage and Regulation) Act provides for the existence of a regulatory body to ensure the safe use of radiation in Nepal.
- The Radioactive Material (Usage and Regulation) Regulations mention the need to develop an emergency response plan.
- Nepal has realized the need to improve national capacities for managing radiation emergencies, and there is a growing trend of meetings between stakeholders.
- A preliminary draft of a National CBRN Strategy has been prepared by the Nepali Army.

Challenges

- Nepal needs a policy and a strategic plan for ensuring the safe use of radiation, and an emergency response plan for radiological and nuclear emergencies.
- There is a need for radiation emergency training for healthcare workers and emergency medical services, as well as regular exercises involving the public health sector.
- There is a need to improve the professional competency of staff working in radiation emergencies.
- There is a need for a central database that unifies data from land and air POE monitoring stations throughout the country.
- More monitoring and surveillance stations are needed.
- A dedicated detection and monitoring laboratory is needed.
- More dedicated hospitals and health facilities are needed.
- Dedicated equipment is needed for radiation detection, surveillance and emergency management.



Recommendations for priority actions

- Formulate a Radiation Emergencies Preparedness and Response Plan (timeline: two years) that identifies a Radiation Protection Officer; articulates the roles and responsibilities of key stakeholders; and designates a focal person at each concerned national authority for communication and coordination with the IHR NFP.
- Establish and activate the regulatory body provided for in the Radioactive Material (Usage and Regulation) Act, 2077 BS (2020), and develop a policy and strategic plan for ensuring the safe use of radiation and management of radioactive materials and waste in Nepal (timeline: one year).
- Establish and maintain an inventory of all facilities with radioactive sources in Nepal (timeline: 1.5 years).
- Provide a training programme on radiation safety and emergency response for occupationally exposed workers and responders at all levels (timeline: three years).

Annex: JEE background

Mission place and dates

Kathmandu, Nepal; 28 November to 2 December, 2022

Mission team members:

- Karen Sliter (team lead), International Atomic Energy Agency (IAEA)
- Rick Brown (team co-lead), World Health Organization (WHO) Country Office for Thailand
- Reuben Samuel (team co-lead), WHO Regional Office for South-East Asia
- Mahendra Arnold, Sri Lanka Ministry of Health
- Niksa Barisic, International Affairs Division Veterinary and Food Safety Directorate, Croatia
- Uzma Bashir, WHO Lyon Office, France
- Yolanda Bayugo, WHO Headquarters
- Nienke Bruinsma, WHO Headquarters
- Teerasak Chuxnum, Thailand Ministry of Public Health
- Jorge Pinto Ferreira, Food and Agriculture Organization of the United Nations (FAO)
- Sebastian Haller, Robert Koch Institute, Germany
- Atia Hossain, World Bank
- Palitha Karunapema, Sri Lanka Ministry of Health
- Meredith Labarda, University of the Philippines
- Ben Lilley, WHO Regional Office for the Western Pacific
- Mohamed Mousif, Morocco Ministry of Health
- Johnny Nehmé, WHO Headquarters
- Mark Nunn, writer
- Luca Porfiri, Joint Division FAO/IAEA
- Arifur Rahman, WHO Country Office for Bangladesh
- Derek James Sloan, University of St Andrews, Scotland, United Kingdom
- Uranchimeg Tsegmed, National Cancer Centre of Mongolia
- Laura Wright, US Centers for Disease Control and Prevention (US CDC)

Objective

To assess Nepal's capacities and capabilities relevant to the 19 technical areas of the JEE tool for providing baseline data to support Nepal's efforts to reform and improve their public health security.

The JEE process

The JEE process is a peer-to-peer review. The entire external evaluation, including discussions around the priority actions, the strengths, the areas that need strengthening, best practices, challenges and the scores are collaborative, with JEE team members and host country experts seeking full agreement on all aspects of the final report findings and recommendations.

Should there be significant and irreconcilable disagreement between the external team members and the host country experts, or among the external experts, or among the host country experts, the JEE team lead will decide the outcome; this will be noted in the final report along with the justification for each party's position.

Field visits

On Monday 28 November the JEE team was able to visit the following institutions:

- National Public Health Laboratory (NPHL)
- Bir Hospital (Central Unified COVID-19 Hospital)
- Family Welfare Division (FWD)
- Health Emergency Operations Centre (HEOC)
- Central veterinary laboratory (CVL)
- Tribhuvan International Airport (PoE)
- Central Zoo

Limitations and assumptions

- The evaluation was limited to one week, which limited the amount and depth of information that could be managed.
- It is assumed that the results of this evaluation will be publicly available.
- The evaluation is not just an audit. Information provided by <host country> will not be independently verified but will be discussed and the evaluation rating mutually agreed to by the host country and the evaluation team. This is a peer-to-peer review.

Key Nepal participants and institutions

Dignitaries Participating in the Joint external evaluation

- H.E. Mr Bhawani Prasad Khapung, Minister of Health and Population
- Dr Roshan Pokhrel, Secretary, Minister of Health and Population
- Dr Sangita Kaushal Mishra, Additional Secretary, Minister of Health and Population
- Dr Dipendra Raman Singh, Director General, Department of Health Services, Minister of Health and Population
- Major General Dr Arun Neopane, Nepal Army
- Dr Samjhana Kafle, Department of Livestock Services
- Dr Matina Joshi, Department of Food Technology and Quality Control
- Dr Madan Kumar Upadhayaya, Member Secretary, IHR Multi Sectoral Coordination Committee
- Dr Chuman Lal Das, Director, Epidemiology and Disease Control Division (IHR National Focal Point)
- Dr Rajesh Sambhajirao Pandav, WHO Representative to Nepal

Ministry of Health and Population

- Abhiyan Gautam
- Anu Shakya
- Badebabu Thapa
- Bal Krishna Awal
- Bala Rai
- Barsha Poudel
- Bhakta KC
- Bharat Bhandari
- Bharat Bhattarai
- Bhawana Kandel
- Bhim Prasad Sapkota
- Bibek Kumar Lal
- Brinda Prajapati
- Chuman Lal Das
- Dabal Bahadur BC
- Goma Devi Niraula
- Gopal Pandey
- Guna Nidhi Sharma
- Hemant Chandra Ojha (JEE national facilitator)
- Jyoti Acharya
- Khageshwor Gelal

- Koshal Chandra Subedee
- Krishna Prasad Paudel
- Kunj Joshi
- Kusha KC
- Lilee Shrestha
- Lok Bandhu Chaudhary
- Madan Kumar Upadhyaya
- Manish Man Shrestha
- Manisha Rawal
- Manoj Pokharel
- Pan Bahadur Chhetri
- Pavan Kumar Sah
- Pomawati Thapa
- Ramesh Rijal
- Rekha Manandhar
- Reshraj Sharma
- Roshika Shrestha
- Runa Jha
- Sagar Dahal
- Samir Kumar Adhikari
- Sanjay Kumar Mahaseth
- Sanjay Kumar Thakur
- Santosh KC
- Shalik Ram Dhital
- Sharbesh Sharma
- Siddhartha Dhungana
- Sonam Singh
- Suman Pant
- Sumida Tiwari
- Sunil Raj Sharma
- Umesh Shrestha
- Usha Tandukar

Ministry of Agriculture and Livestock Development

- Barsha Thapa Magar
- Barun K Sharma
- Bijan Shrestha
- Bikash Giri
- Binod Sanjel
- Chandra Dhakal
- Kishor Khatri
- Krishnaraj Pandey
- Luna Gongal
- Matina Joshi Vaidya
- Mod Nath Gautam
- Mohan Krishna Maharjan
- Mukul Upadhaya Sapkota
- Mukul Updhayay
- Nabaraj Shrestha

- Nabin Upadhyaya
- Najuma Joshi
- Pragya Koirala
- R.C. Sapkota
- Ram Chandra Sapkota
- Ram Nanda Tiwari
- Sabina Koirala
- Sabitri Baral
- Sailesh Kumar Jha
- Samjhana Kumari Kafley
- Sanjay Bhandari
- Santosh Dhakal
- Sharmila Chapagain
- Som Kanta Rijal
- Sulochana Poudel
- Sulochana Shrestha
- Suman Dhital
- Suraj Subedi
- Surya Prasad Paudel
- Tanka Prasad Prasain
- Tulsi Ram Gompo

Ministry of Culture, Tourism and Civil Aviation

- Hansh Raj Pandey
- Raju Shrestha
- Ramesh Kumar Mahat
- Shikha Tiwari

Nepal Police/Armed Police Force/ Nepal Army

- Damodar Poudel
- Kumar Shrestha
- Nabin Bhakta Shakya
- Prahlad Karki
- Sailendra K D Shrestha
- Santosh Gurung
- Shyam Gyanwali
- Suman Ghimire
- Surendra Pratap Rawal
- Uttam Giri

Other Agencies (Ministry of Home Affairs/ National Trust for Nature Conservation/ others agencies)

- Chiranjibi Pokheral
- Rachana Shah
- Tekendra Karki
- Tulsi Prasad Dahal

Provincial Representative

- Angad Bahadur Sahi
- Brish Bahadur Shahi
- Hem Raj Joshi
- Madhav Kumar Karn
- Pravin Kumar Khanal
- Ram Binay Sah
- Ram Prasad Ojha

WHO Nepal facilitation support

Under the leadership of Dr Rajesh Sambhajirao Pandav, WHO Representative to Nepal, acknowledging the preparation and facilitation support from technical and administrative teams of WHO Country Office for Nepal through the WHO Health Emergencies Programme, led by Dr Allison Gocotano, Team Leader and coordinated by Dr Dipendra Gautam, National Professional Officer for International Health Regulations.”

Supporting documentation provided by Nepal**01. Legal instruments**

- Constitution of Nepal (2015)
- Public Health Service Act, 2075 BS (2018) and regulations
- Infectious Disease Act, 2020 BS (1964)
- Disaster Risk Reduction and Management Act, 2074 BS (2017) and rules
- Animal Health and Livestock Services Act, 2055 BS (1999)
- Report on Unbundling/Detailing of List of Exclusive and Concurrent Powers of the Federation, the State (Province) and the Local Level Provisioned in the Schedule 5, 6, 7, 8, 9 of the Constitution of Nepal, 2017
- Other legal instruments relevant to IHR, including in medicines regulation, environmental protection, waste management, immunization, reproductive health, privacy, animal health, and food safety,
- One Health Strategy, 2019
- National Health Policy, 2019
- Gender Equity and Social Inclusion Strategy of the Health Sector, 2018
- Study Report on Implementation in Nepal of International Health Regulations (2005), 2007 (contains legal mapping)
- Peer-reviewed research and relevant grey literature

02. Financing

- The Public Health Service Act, 2075 (2018). Date of Authentication 2075/6/2 (18 September 2018). Act Number 11 of the year 2075 (2018).
- National Pandemic Preparedness and Response Plan (NPPRP 2019). Department of Health Services, Epidemiology and Diseases Control Division, Ministry of Health and Population. Government of Nepal, 2019.
- Health Sector Budget Analysis: First Five Years of Federalism. Federal Ministry of Health and Population, Policy Planning and Monitoring Division. Government of Nepal. January, 2022.
- Increasing Investment in Pandemic/Epidemic Preparedness in Nepal. Discussion paper, March 2020. World Bank Group.
- The Fifteenth Plan (Fiscal Year 2019/20 – 2023/24). National Planning Commission. The Government of Nepal. March 2020.
- Annual Report - Department of Health Services 2077/78 (2020/21). Department of Health Services, Ministry of Health and Population. Government of Nepal.
- Uprety, Sudeep and Lamichhane, Bipul. Health Budgeting and Financing in Nepal: Policy Perspectives. August 2016.
- Progress of the Health and Population Sector, 2020/21. National Joint Annual Review Report – 2021 (2078 BS). Ministry of Health and Population. Government of Nepal. December 2021.
- National Health Sector Strategy 2016-2021.

03. IHR coordination, national IHR focal point functions & advocacy

- National IHR Committee Term of Reference (ToR)
- Assessment of Implementation Status of Core Capacities and Action Plans for International Health Regulation (2005) final report 2009
- Nepal IHR State Party Self-Assessment Annual Reporting (SPAR)
- Nepal Intra-Action Review (IAR) of the response to COVID-19
- Disaster Risk Reduction and Management Act 2017
- Infectious Disease Act 2020

04. AMR

- National action plan for AMR and/or plans for AMR detection/reporting, surveillance of AMR, monitoring antimicrobial consumption and use, IPC programmes in human health facilities, infection prevention and improved husbandry in livestock/food production, and plans to improve use and quality of antimicrobials (such as antimicrobial stewardship programmes).
- Monitoring reviews of progress with implementation of national action plan(s) and related plans
- Country response to the global monitoring survey on AMR
- Available WOAHP PVS Pathway reports
- Minutes from meetings or outputs of the multisectoral coordination committee or group
- Reports measuring:
 - » The proportion of AMR pathogens among specimens or isolates;
 - » results from participation in international external quality assessment (EQA) rounds of the national reference laboratory;
 - » incidence of infections caused by AMR pathogens at sentinel sites (community and hospital acquired);
 - » antimicrobial consumption levels or surveys of use (human and animal including medicated animal feed – terrestrial and aquatic);
 - » proportion of facilities adhering to best practices for IPC including hand hygiene (if known);
 - » mandatory farm quality assurance programmes that include antimicrobial use surveillance and stewardship information; and
 - » availability of antimicrobials (or stock-outs), hygiene supplies and WASH in health facilities; and percentage of antibiotics administered appropriately (if surveyed).

05. Zoonotic disease

- One Health Policy 2022
- Bird Flu Control Regulation 2022
- National Rabies Control Strategy (draft)
- Zoonotic Disease Prioritization Workshop Reports
- Other workshop reports
- National Avian Influenza Surveillance Plan 2016

06. Food safety

- A guide to Early Warning and Reporting System (EWARS)- Revised edition 2019 <http://www.edcd.gov.np/resources/download/early-warning-and-reporting-system-guidelines>
- DFTQC Official Website <http://www.dftqc.gov.np/content/99/2020/76395721/>
- DFTQC Notice, 2078 (2022) <http://www.dftqc.gov.np/noticedetail/142/2022/99494959>
- Directives on hotel restaurant categorization based on food safety 2074 BS <http://www.dftqc.gov.np/downloadsdetail/3/2020/69519565/>
- EDCCD Official website <https://edcd.gov.np/>
- EWARS Weekly Bulletin <https://edcd.ekbana.info/resources/download/ewars-weekly-bulletin-37th-week-2022>
- Food Regulations 2027 BS (1970) <http://www.dftqc.gov.np/downloadsdetail/4/2020/88500455/>
- National Food Safety Policy 2076 BS <http://www.dftqc.gov.np/downloadsdetail/3/2020/69519565>

07. Biosafety & biosecurity

- Poliovirus Containment Action Plan – Nepal (2022)
- National Health Care Waste Management Standards and Operating Procedures (2020)
- Public Health Service Regulations (2020)
- National Health Policy (2019)
- The Public Health Service Act, 2075 (2018)
- Health Care Waste Management Guideline (2014)
- SOP.11 for handling at emerging situation at CVL
- SOP.8 for laboratory waste management at CVL
- SOP for performance monitoring evaluation
- SOP.7 for Rodents and Pest control
- SOP.21 for storage, handling and transportation of hazardous chemicals and reference standards/ materials
- Laboratory Quality Manual at CVL
- SOP.22 for transportation, handling, storage, retention, disposal or return of test tissue sample.
- SOP.23 for Risk Analysis at Central Veterinary Laboratory
- SOP.2 General Decontamination
- SOP.3 Biological Spillage Management
- SOP.4 Waste Management
- Interim guidelines for SARS-CoV-2 PCR laboratories in National Public Health Laboratory Network
- Biosafety protocol for SARS-CoV-2 Antigen test
- SOP for Infection prevention and control practices in COVID-19 testing laboratories
- SOP Packaging of infectious and potentially infectious material
- SOP storage and management of clinical specimens
- SOP for case investigation and contact tracing of Monkeypox
- SOP Detection of Rabies Virus by Real-Time PCR
- SOP Detection of Monkeypox virus by Real Time PCR test

08. Immunization

- Multi Year Plan of Action 2017- 2021
- NIAC Recommendations minutes
- Immunization Act 2072
- Welcome Global Monitor Report
- Nepal Demographic and Health Survey
- AWPB/Annual Operational Guideline
- Multiple Indicator Cluster Survey
- Government and GAVI agreement for Cold chain equipment's optimization platform (CCEOP)
- Nepal Cholera Outbreak Response Immunization Strategic Guideline 2078/79 (2021)
- JE Campaign Guideline, 2016
- Typhoid Vaccine Campaign and RI Introduction Guideline, 2022
- Coverage survey report (JE and MR) Comprehensive
- FID Guideline / Missed Child Vaccination Guideline/Endorsed Delay schedule/ Microplanning templates and Guidelines
- MR coverage survey report 2022
- HMIS Guideline
- Household survey reports during FID from ward/health facility level
- RDQA Guideline/assessment
- Cold chain and vaccine management operational guideline
- EVM assessment report
- Cold Chain Replacement plan

- Microplanning templates and guidelines/ Missed child vaccination strategy and FID
- Cold chain and vaccine management operational guideline
- Cholera Outbreak Response Immunization Strategic Guideline
- Measles/Rubella Vaccine Campaign Operational Guideline
- TCV campaign operational guideline
- Program Guideline for COVID-19 Vaccine Introduction
- 1) COVID-19 vaccination operational guideline

09. National lab system

- National Lab Policy, 2012
- National Health Policy, Rev. 2019
- Laboratory Establishment Standards, 2016
- Minimum Service Standards, 2019
- Health Center Establishment Standards, 2020
- Nepal Health Sector Support Programme, 2018-21
- Health Institution Operation Standards 2020
- National List of Priority Zoonotic Diseases 2021
- Interim Guidelines for SARS-CoV-2 PCR laboratories in National Public Health Laboratory Network, Nepal 2020
- NPHL Laboratory Quality Manual
- Central Veterinary Laboratory (CVL) Annual Technical Report Fiscal year 2076/77 (2019/20).
- Laboratory Quality Manual of Central Veterinary Laboratory, 2021 (Based on ISO/IEC 17025)
- Public Procurement Regulation 2064 (2007)
- Data sharing mechanism for COVID 19: <https://imucovid19.mohp.gov.np/login>

10. Surveillance

- Early Warning and Reporting System (EWARS) Guidelines, GoN, MOH, Dept of Health Services, EDCD
- Early Warning and Reporting System (EWARS) online weekly and annual reports, <https://www.edcd.gov.np/ewars>
- National Rapid Response Team (RRT) TOR

11. Human resources

- National Human Resources for Health Strategy 2021-2030, Nepal National HRH Strategy 2021-2030 Nepal
- Job description of Health workers in Nepal
- Public Health Service Regulations, 2020 <https://drive.google.com/file/d/18z4fsAdolxLDWwQwJjmagKDTiL2m2dOj/view>
- Basic health service act
- https://drive.google.com/file/d/1NBHrLNamYs9Ned37JweCfig-f_5WNh_w/view
- Labour Act, 2074 (श्रम-ऐन-२०७४.pdf)
- Act related to Health workers safety <https://drive.google.com/file/d/1XgRYMFUnok-QUfU8YuxKOGQwvoMSaNS3/view>
- नेपाल-कृषि-सेवा-गठन-समूह-तथा-श्रेणी-वर्गीकरण-र-नियुक्ति-नियमहरू-२०५०.pdf
- Civil Service Act.pdf [https://worldhealthorg-my.sharepoint.com/:b:/r/personal/sunnya_who_int/Documents/JEE 2022/D3 Human Resources/नेपाल-कृषि-सेवा-गठन-समूह-तथा-श्रेणी-वर्गीकरण-र-नियुक्ति-नियमहरू-२०५०.pdf?csf=1&web=1&e=ohEtNk](https://worldhealthorg-my.sharepoint.com/:b:/r/personal/sunnya_who_int/Documents/JEE%2022/D3%20Human%20Resources/नेपाल-कृषि-सेवा-गठन-समूह-तथा-श्रेणी-वर्गीकरण-र-नियुक्ति-नियमहरू-२०५०.pdf?csf=1&web=1&e=ohEtNk)
- dls.gov.np
- vec.gov.np
- One Health strategy 2019
- cvl.gov.np
- pis.gov.np

- <https://cpdnmc.org.np/Account>
- <https://onlinecpd.dohs.gov.np/>
- <https://www.fao.org/nepal/news/detail/en/c/885951/>
- Livestock training curriculum book by ctp_1631442401.pdf
- <https://aitc.gov.np/>
- <https://www.fao.org/nepal/news/detail/en/c/885951/>
- Rabies outbreak Investigation Report_kavre_final19th August2021.pdf
- <http://nva.org.np/>
- नेपाल-कृषि-सेवा-गठन-समूह-तथा-श्रेणी-वभिजन-र-नयुक्त-नियमहरू-२०५०.pdf
- Civil Service Act.pdf
- One Health Strategy
- Livestock training curriculum

12. Health emergency management

- Annual Work Plan Budget of Health Emergency Operation Center, Fiscal Year 2078/79
- COVID-19 Emergency Medical Deployment Team (EMDT) Mobilization Guidelines, May 28, 2020
- Disaster Risk Reduction and Management Act, 2074 And Disaster Risk Reduction and Management Rules, 2076 (2019)
- Handbook on facilitation on purchase and procurement of medical supplies, 2074
- Health Emergency Operation Centre Network of Nepal: The Voyage and the Vista
- Health Emergency Operation Centre (HEOC) Standard Operating Procedures 2014
- Health Research Priority Areas of Nepal 2019 (Page 2-4,14,17-18)
- Kathmandu Valley Drill, 2018
- Ministry of Health and Population (MoHP) Terms of Reference
- Model Agreement for Emergency Customs Procedure, 2007
- Monsoon Preparedness Plan, 2079
- National Disaster Response Framework (NDRF) 2013, (First Amendment 2018)
- National Emergency Operation Centre (NEOC) Standard Operating Procedures, 2015
- National Ethical Guidelines for Health Research in Nepal, 2022
- National Health Policy (6.14)
- Nepal Disaster Report, 2019
- Nepal Hazard Risk Assessment, 2010
- Nepal Health Research Strategy, 2076
- Nepal Health Research Council Act, 2047 (1991)
- Nepal Simex 2022 Observer Evaluation Tool
- One Health Strategy, 2076
- Public Health Service Regulations, 2020 (Chapter 8, Section 27 and 28, Page 9-11)
- Public Procurement Act
- Rapid Action Plan Version 4

13. Linking public health & security authorities

- Ratification of BWC
- National disaster plan 2011 seems there are no instances when MOHP or DHS and security ministries are coordinating an activity during a disaster. Even for : Information flow about atomic, bio and chemical hazards and rescue the affected people Ministry of Science, Technology and Environment
- DRR action plan(considers also Sendai framework and SDGs) mentions multi hazard preparedness not clear if MOHA specifically mentions security .if this is the case in the DRR there is a plan to link PH with Security

- National policy on DRR mentions cross cutting ministries for response including “7.13 The institutional capacity will be enhanced by establishing, developing, extending and networking the National Disaster Risk Reduction and Management Authority (NDRRMA), Volunteer’s Bureau, Flying squad, Fire brigade, Emergency Operation Centers and Health Emergency Operation Centers.”
- The Constitution of Nepal, 2072 BS (2015 AD)
- Infectious Disease Act, 2020 BS (1964)
- Disaster Risk Reduction and Management of Act 2074 BS (2017) and Disaster Risk Reduction and Management Rule 2076 BS (2019)
- Disaster Risk Reduction Strategic plan of Action 2018-2030
- Public Health Service Act 2075 BS
- NEOC Standard Operating procedure
- HEOC Standard Operating procedure

14. Health services provision

- Public Health Service Act 2075: <https://www.lawcommission.gov.np/en/wp-content/uploads/2019/07/The-Public-Health-Service-Act-2075-2018.pdf> (Page 3 : point no. 3):
- Public Health Service Regulation 2077: <https://publichealthupdate.com/public-health-service-regulation-2077/> (Page 38 to 43)
- Standard Treatment Protocol (STP) for Basic Health Services (BHS) Package 2078: <http://dohs.gov.np/wp-content/uploads/2022/02/STANDARD-TREATMENT-PROTOCOL-STP-FOR-BASIC-HEALTH-SERVICES-BHS-PACKAGE-2078.pdf>
- Standard Treatment Protocol of Emergency Health Service Package 2078: <http://dohs.gov.np/category/publications/page/2/>
- MSS tool for
 - » a. Health Posts: https://nssd.dohs.gov.np/mapdanda/MSS_HealthPost.pdf
 - » b. Secondary A hospitals: <https://dohs.gov.np/wp-content/uploads/2021/09/MSS-Book-Primary-Hospitals.pdf>
 - » c. Secondary B hospitals: <https://dohs.gov.np/wp-content/uploads/2021/09/MSS-Secondary-B-Hospitals-with-higher-services.pdf>
 - » d. Primary hospitals: http://www.nhssp.org.np/Resources/HPP/MSS_Primary_Hospitals.pdf
- Health sector Social Audit operational guideline 2068 (2012): k"j{ cEof;sf] nflu cIGtd d:of}bf (nhssp.org.np) (Page no. 9; 2.2 participants in the social audit process & pg. 11; 2.3.3 Areas related to quality of health services)
- Integrated Health Information Management System Roadmap 2022-2030 <https://publichealthupdate.com/integrated-health-information-management-system-ihmis-roadmap/>
- Department of Health Services Annual report 2022 https://dohs.gov.np/wp-content/uploads/2022/07/DOHS-Annual-Report-FY-2077-78-date-5-July-2022-2022_FINAL.pdf
- Disaster Risk Reduction and Management Act 2074 (2017) and Disaster Risk Reduction and Management Rules 2076: <https://bipad.gov.np/np/publications/detail/72>
- Rapid hospital readiness facility assessment of fourteen hospitals inside Kathmandu Valley: <https://drive.google.com/file/d/1wzO3jgp3U-Yxc-UhLxjqw8NjG3nRXPzc/view>
- Rapid hospital readiness facility assessment of seven provincial COVID-19 unified hospitals: https://drive.google.com/file/d/1X9E8BXHeOO_5WeLGKxl2ERQyBJHBpIkC/view

15. Infection prevention & control

- WHO Guidelines on core components of IPC programmes at the national and acute health care facility level for more information (<https://www.who.int/publications/i/item/9789241549929>, accessed 16 March 2022). ISBN 978-92-4-154992-9
- WHO minimum requirements for IPC programmes (<https://www.who.int/publications/i/item/9789241516945>)
- Assessment tool of the minimum requirements for infection prevention and control programmes (<https://www.who.int/publications/m/item/assessment-tool-of-the-minimum-requirements-for-infection-preventionand-control-programmes-at-the-national-level>).

- WHO multimodal improvement strategy ([https://cdn.who.int/media/docs/default-source/integrated-health-services-\(ihs\)/infection-prevention-and-control/core-components/ipc-cc-mis.pdf?sfvrsn=5e06c3d5_10&download=true](https://cdn.who.int/media/docs/default-source/integrated-health-services-(ihs)/infection-prevention-and-control/core-components/ipc-cc-mis.pdf?sfvrsn=5e06c3d5_10&download=true))
- Ministry of Health and Population, Nepal; New ERA, Nepal; and ICF. 2022. Nepal Health Facility Survey 2021 Final Report. Kathmandu, Nepal: Ministry of Health and Population, Kathmandu; New ERA, Nepal; and ICF, Rockville, Maryland, USA.
- <https://www.who.int/nepal/news/detail/15-08-2022-national-symposium-on-infection-prevention-and-control-paves-way-for-the-finalization-of-the-first-national-guideline-on-ipc>
- Guideline for health institution establishment, operation & upgrade standard – MoH
- <https://drive.google.com/file/d/1us42smkPXnSth0TKjSBwp-O-gbxbp9ts3/view>
- Minimum Service Standard for Tertiary level hospital
- https://nssd.dohs.gov.np/mapdanda/MSS_tertiary_hospitals.pdf
- Minimum Service Standard for secondary level hospital
- <https://dohs.gov.np/wp-content/uploads/2021/09/MSS-Secondary-B-Hospitals-with-higher-services.pdf>
- Minimum Service Standard for primary level hospital
- <https://dohs.gov.np/wp-content/uploads/2021/09/MSS-Book-Primary-Hospitals.pdf>
- Minimum Service Standard for health post
- https://drive.google.com/file/d/1d29y-udee4_cuWR8ZOeWGUF5BHmGwWa/view
- Clinical Audit, IPC Audit, Antimicrobial Resistance National Action Plan
- HCWM SOP 2020,
- <https://dohs.gov.np/standard-operating-procedure-on-hcwn/>
- https://drive.google.com/file/d/129G4_HT0wBHqHakto0jYtBGzPS27QMUC/view
- WASH Standard 2078
- IPC and Environment Health, Health Care Waste Management, Water Sanitation and Hygiene trainings module

16. Risk communication & community engagement

- MOHP Website – LINK HERE
- MOHP Facebook page – LINK HERE
- MOHP COVID-19 portal – LINK HERE
- MOHP Twitter – LINK HERE
- DOHS Website – LINK HERE
- National Health Education, Information and Communication Centre Website – LINK HERE
- National Health Education, Information and Communication Centre Facebook page – LINK HERE
- Policies, Strategies, Directive, Guideline, Book
- Letters, Agreements, MoUs
- Report and Surveys
- Risk Communication Materials – Multimedia
- Media department strategy, community outreach plans, media response plans
- Organizational chart
- Emergency risk communication staff plans, surge plan
- Emergency response budget sample and long-term budget plan
- Mechanism of sharing plan alteration
- Data from public health hotline (e.g. Relevant questions from the public)
- Knowledge, attitudes and practice surveys
- Reports from social scientists and anthropologists involved in the response
- Social media monitoring
- Partner coordination meeting records
- Response reports
- News stories during past emergencies

- Plans for communication coordination with external agencies
- After action reports from exercises or emergency responses
- Agreed response plan and coordinated budget plan for emergency communication
- Communication research protocols and publications (formal/informal)
- Examples of misinformation and methods for handling them
- Baseline surveys and maps of social data related to increased risk for top five hazards
- Risk assessments that address the most likely local public health threats
- Community outreach plan

17. Points of entry & border health

- Directives for detecting, notifying and responding – Rajpatra
- Assessment Checklist for Health Desk at Ground Crossings
- Point of Entry (POE) Data Recording Form
- Public health requirements for disembarking passengers - AIP NEPAL, CAAN
- Orientation manual on COVID management at POE
- Guidance to aviation service providers for the management of aviation safety risks related to COVID-19 – CAAN
- National Aviation Public Health Emergency Preparedness Plan (Draft)
- Travel advisory – Immigration Department, TIA
- Documents on the architectural drawing of the health desk at POEs
- Decisions of the High-level coordination committee for the prevention and control of COVID-19
- TIA COVID-19 Crisis Management Procedure 2020 (Supplement to TIA Airport Emergency Plan 2019)

18. Chemical events

- Constitution of Nepal
- National Security Policy
- National Defense Policy
- Disaster Management National Strategy
- Environment protection rules/act touch upon industries not polluting the environment
- Health care waste management chap 7.10 touches base on emergency management of spillage
- Solid waste management act/rules involve chemical waste but do not tackle spill management of toxic chemicals
- Acids and other chemicals act
- Poison and other dangerous chemical substance Act, 2077
- Nepal gazette depository of toxic chemicals and any hazardous waste declared by industries and potentially polluting bodies
- Declaration of ratification of the chemical weapons convention

19. Radiation emergencies

- National Nuclear Policy 2064 BS (2007)
- Radioactive Material (Usage & Regulation) Act, 2077 BS (2020)
- Radioactive Material (Usage & Regulation) Regulations, 2078 BS (2021)

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