

outcome_c ode	outcome_statement	domain_c ode	domain_title	cluster	curriculum_layer	emergency_phases	role_pathways	terminal_proficiency	required_prod ucts	assessment_context	source_anchor_ids	source_anchor_citations
D01.1	Distinguish Public Health Emergency Management, Health Emergency and Disaster Risk Management, public health emergency preparedness, an incident management system and a public health emergency operations center.	D01	Foundations of Public Health Emergency Management and all-hazards systems	Foundations, governance and risk reduction	Universal core	All phases	RP01-RP16	P3 Coordinate; P4 Lead for system functions	PP01	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I01; I02; I03; I11; I13; I14; I22; I23; I25	World Health Organization. Health Emergency and Disaster Risk Management Framework [Internet]. Geneva: World Health Organization; 2019 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/9789241516181 United Nations Office for Disaster Risk Reduction. Sendai Framework for Disaster Risk Reduction 2015-2030 [Internet]. Geneva: United Nations; 2015 [cited 2026 Jul 19]. Available from: https://www.undrr.org/publication/sendai-framework-disaster-risk-reduction-2015-2030 World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Rose DA, Murthy S, Brooks J, Bryant J. The evolution of public health emergency management as a field of practice. Am J Public Health. 2017;107(S2):S126-S133. doi:10.2105/AJPH.2017.303947. Nelson C, Lurie N, Wasserman J, Zakowski S. Conceptualizing and defining public health emergency preparedness. Am J Public Health. 2007;97(Suppl 1):S9-S11. doi:10.2105/AJPH.2007.114496. Olu O, Usman A, Kalambay K, Anyangwe S, Voyi K, Orach CG, Azazh A, Mapatano MA, Nsenga N, Manga L, Woldetsadik S, Nguessan F, Benson A. What should the African health workforce know about disasters? Proposed competencies for strengthening public health disaster risk management education in Africa. BMC Med Educ. 2018;18:60. doi:10.1186/s12909-018-1163-9. Hung KKC, MacDermot MK, Hui TSI, Chan SY, Mashino S, Mok CPY, Leung PH, Kayano R, Abrahams J, Wong CS, Chan EYY, Graham CA. Mapping study for health emergency and disaster risk management competencies and curricula: literature review and cross-sectional survey. Global Health. 2024;20:15. doi:10.1186/s12992-023-01010-y. European Centre for Disease Prevention and Control. Public health emergency preparedness: core competencies for European Union Member States [Internet]. Stockholm: ECDC; 2017 [cited 2026 Jul 19]. doi:10.2900/049462.
D01.2	Apply the full cycle of prevention, mitigation, preparedness, readiness, response, recovery and learning to infectious, environmental, technological, humanitarian and deliberate hazards.	D01	Foundations of Public Health Emergency Management and all-hazards systems	Foundations, governance and risk reduction	Universal core	All phases	RP01-RP16	P3 Coordinate; P4 Lead for system functions	PP01	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I01; I02; I03; I11; I13; I14; I22; I23; I25	World Health Organization. Health Emergency and Disaster Risk Management Framework [Internet]. Geneva: World Health Organization; 2019 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/9789241516181 United Nations Office for Disaster Risk Reduction. Sendai Framework for Disaster Risk Reduction 2015-2030 [Internet]. Geneva: United Nations; 2015 [cited 2026 Jul 19]. Available from: https://www.undrr.org/publication/sendai-framework-disaster-risk-reduction-2015-2030 World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Rose DA, Murthy S, Brooks J, Bryant J. The evolution of public health emergency management as a field of practice. Am J Public Health. 2017;107(S2):S126-S133. doi:10.2105/AJPH.2017.303947. Nelson C, Lurie N, Wasserman J, Zakowski S. Conceptualizing and defining public health emergency preparedness. Am J Public Health. 2007;97(Suppl 1):S9-S11. doi:10.2105/AJPH.2007.114496. Olu O, Usman A, Kalambay K, Anyangwe S, Voyi K, Orach CG, Azazh A, Mapatano MA, Nsenga N, Manga L, Woldetsadik S, Nguessan F, Benson A. What should the African health workforce know about disasters? Proposed competencies for strengthening public health disaster risk management education in Africa. BMC Med Educ. 2018;18:60. doi:10.1186/s12909-018-1163-9. Hung KKC, MacDermot MK, Hui TSI, Chan SY, Mashino S, Mok CPY, Leung PH, Kayano R, Abrahams J, Wong CS, Chan EYY, Graham CA. Mapping study for health emergency and disaster risk management competencies and curricula: literature review and cross-sectional survey. Global Health. 2024;20:15. doi:10.1186/s12992-023-01010-y. European Centre for Disease Prevention and Control. Public health emergency preparedness: core competencies for European Union Member States [Internet]. Stockholm: ECDC; 2017 [cited 2026 Jul 19]. doi:10.2900/049462.

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D01.3	Map the public health, health-care, emergency-management, One Health, community, private-sector and civil-protection actors involved in an emergency system.	D01	Foundations of Public Health Emergency Management and all-hazards systems	Foundations, governance and risk reduction	Universal core	All phases	RP01-RP16	P3 Coordinate; P4 Lead for system functions	PP01	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I01; I02; I03; I11; I13; I14; I22; I23; I25	World Health Organization. Health Emergency and Disaster Risk Management Framework [Internet]. Geneva: World Health Organization; 2019 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/9789241516181 United Nations Office for Disaster Risk Reduction. Sendai Framework for Disaster Risk Reduction 2015-2030 [Internet]. Geneva: United Nations; 2015 [cited 2026 Jul 19]. Available from: https://www.undrr.org/publication/sendai-framework-disaster-risk-reduction-2015-2030 World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Rose DA, Murthy S, Brooks J, Bryant J. The evolution of public health emergency management as a field of practice. Am J Public Health. 2017;107(S2):S126-S133. doi:10.2105/AJPH.2017.303947. Nelson C, Lurie N, Wasserman J, Zakowski S. Conceptualizing and defining public health emergency preparedness. Am J Public Health. 2007;97(Suppl 1):S9-S11. doi:10.2105/AJPH.2007.114496. Olu O, Usman A, Kalambay K, Anyangwe S, Voyi K, Orach CG, Azazh A, Mapatano MA, Nsenga N, Manga L, Woldetsadik S, Nguessan F, Benson A. What should the African health workforce know about disasters? Proposed competencies for strengthening public health disaster risk management education in Africa. BMC Med Educ. 2018;18:60. doi:10.1186/s12909-018-1163-9. Hung KKC, MacDermot MK, Hui TSI, Chan SY, Mashino S, Mok CPY, Leung PH, Kayano R, Abrahams J, Wong CS, Chan EYY, Graham CA. Mapping study for health emergency and disaster risk management competencies and curricula: literature review and cross-sectional survey. Global Health. 2024;20:15. doi:10.1186/s12992-023-01010-y. European Centre for Disease Prevention and Control. Public health emergency preparedness: core competencies for European Union Member States [Internet]. Stockholm: ECDC; 2017 [cited 2026 Jul 19]. doi:10.2900/049462.
D01.4	Analyse dependencies and cascading effects across health services, laboratories, supply chains, information systems, infrastructure and communities.	D01	Foundations of Public Health Emergency Management and all-hazards systems	Foundations, governance and risk reduction	Universal core	All phases	RP01-RP16	P3 Coordinate; P4 Lead for system functions	PP01	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I01; I02; I03; I11; I13; I14; I22; I23; I25	World Health Organization. Health Emergency and Disaster Risk Management Framework [Internet]. Geneva: World Health Organization; 2019 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/9789241516181 United Nations Office for Disaster Risk Reduction. Sendai Framework for Disaster Risk Reduction 2015-2030 [Internet]. Geneva: United Nations; 2015 [cited 2026 Jul 19]. Available from: https://www.undrr.org/publication/sendai-framework-disaster-risk-reduction-2015-2030 World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Rose DA, Murthy S, Brooks J, Bryant J. The evolution of public health emergency management as a field of practice. Am J Public Health. 2017;107(S2):S126-S133. doi:10.2105/AJPH.2017.303947. Nelson C, Lurie N, Wasserman J, Zakowski S. Conceptualizing and defining public health emergency preparedness. Am J Public Health. 2007;97(Suppl 1):S9-S11. doi:10.2105/AJPH.2007.114496. Olu O, Usman A, Kalambay K, Anyangwe S, Voyi K, Orach CG, Azazh A, Mapatano MA, Nsenga N, Manga L, Woldetsadik S, Nguessan F, Benson A. What should the African health workforce know about disasters? Proposed competencies for strengthening public health disaster risk management education in Africa. BMC Med Educ. 2018;18:60. doi:10.1186/s12909-018-1163-9. Hung KKC, MacDermot MK, Hui TSI, Chan SY, Mashino S, Mok CPY, Leung PH, Kayano R, Abrahams J, Wong CS, Chan EYY, Graham CA. Mapping study for health emergency and disaster risk management competencies and curricula: literature review and cross-sectional survey. Global Health. 2024;20:15. doi:10.1186/s12992-023-01010-y. European Centre for Disease Prevention and Control. Public health emergency preparedness: core competencies for European Union Member States [Internet]. Stockholm: ECDC; 2017 [cited 2026 Jul 19]. doi:10.2900/049462.

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D01.5	Describe how routine public health functions scale, adapt or transfer authority during emergencies.	D01	Foundations of Public Health Emergency Management and all-hazards systems	Foundations, governance and risk reduction	Universal core	All phases	RP01-RP16	P3 Coordinate; P4 Lead for system functions	PP01	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I01; I02; I03; I11; I13; I14; I22; I23; I25	World Health Organization. Health Emergency and Disaster Risk Management Framework [Internet]. Geneva: World Health Organization; 2019 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/9789241516181 United Nations Office for Disaster Risk Reduction. Sendai Framework for Disaster Risk Reduction 2015-2030 [Internet]. Geneva: United Nations; 2015 [cited 2026 Jul 19]. Available from: https://www.undrr.org/publication/sendai-framework-disaster-risk-reduction-2015-2030 World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Rose DA, Murthy S, Brooks J, Bryant J. The evolution of public health emergency management as a field of practice. Am J Public Health. 2017;107(S2):S126-S133. doi:10.2105/AJPH.2017.303947. Nelson C, Lurie N, Wasserman J, Zakowski S. Conceptualizing and defining public health emergency preparedness. Am J Public Health. 2007;97(Suppl 1):S9-S11. doi:10.2105/AJPH.2007.114496. Olu O, Usman A, Kalambay K, Anyangwe S, Voyi K, Orach CG, Azazh A, Mapatano MA, Nsenga N, Manga L, Woldetsadik S, Nguessan F, Benson A. What should the African health workforce know about disasters? Proposed competencies for strengthening public health disaster risk management education in Africa. BMC Med Educ. 2018;18:60. doi:10.1186/s12909-018-1163-9. Hung KKC, MacDermot MK, Hui TSI, Chan SY, Mashino S, Mok CPY, Leung PH, Kayano R, Abrahams J, Wong CS, Chan EYY, Graham CA. Mapping study for health emergency and disaster risk management competencies and curricula: literature review and cross-sectional survey. Global Health. 2024;20:15. doi:10.1186/s12992-023-01010-y. European Centre for Disease Prevention and Control. Public health emergency preparedness: core competencies for European Union Member States [Internet]. Stockholm: ECDC; 2017 [cited 2026 Jul 19]. doi:10.2900/049462.
D01.6	Prepare a system map and concise improvement brief for a national, subnational or district Public Health Emergency Management priority.	D01	Foundations of Public Health Emergency Management and all-hazards systems	Foundations, governance and risk reduction	Universal core	All phases	RP01-RP16	P3 Coordinate; P4 Lead for system functions	PP01	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I01; I02; I03; I11; I13; I14; I22; I23; I25	World Health Organization. Health Emergency and Disaster Risk Management Framework [Internet]. Geneva: World Health Organization; 2019 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/9789241516181 United Nations Office for Disaster Risk Reduction. Sendai Framework for Disaster Risk Reduction 2015-2030 [Internet]. Geneva: United Nations; 2015 [cited 2026 Jul 19]. Available from: https://www.undrr.org/publication/sendai-framework-disaster-risk-reduction-2015-2030 World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Rose DA, Murthy S, Brooks J, Bryant J. The evolution of public health emergency management as a field of practice. Am J Public Health. 2017;107(S2):S126-S133. doi:10.2105/AJPH.2017.303947. Nelson C, Lurie N, Wasserman J, Zakowski S. Conceptualizing and defining public health emergency preparedness. Am J Public Health. 2007;97(Suppl 1):S9-S11. doi:10.2105/AJPH.2007.114496. Olu O, Usman A, Kalambay K, Anyangwe S, Voyi K, Orach CG, Azazh A, Mapatano MA, Nsenga N, Manga L, Woldetsadik S, Nguessan F, Benson A. What should the African health workforce know about disasters? Proposed competencies for strengthening public health disaster risk management education in Africa. BMC Med Educ. 2018;18:60. doi:10.1186/s12909-018-1163-9. Hung KKC, MacDermot MK, Hui TSI, Chan SY, Mashino S, Mok CPY, Leung PH, Kayano R, Abrahams J, Wong CS, Chan EYY, Graham CA. Mapping study for health emergency and disaster risk management competencies and curricula: literature review and cross-sectional survey. Global Health. 2024;20:15. doi:10.1186/s12992-023-01010-y. European Centre for Disease Prevention and Control. Public health emergency preparedness: core competencies for European Union Member States [Internet]. Stockholm: ECDC; 2017 [cited 2026 Jul 19]. doi:10.2900/049462.

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D02.1	Interpret the International Health Regulations and relevant national emergency, public health, disaster-management, data-protection and occupational-safety law.	D02	Law, policy, ethics, equity and accountability	Foundations, governance and risk reduction	Universal core with context-adaptable national law	All phases	RP01-RP04, RP08-RP10, RP13, RP15	P4 Lead; P5 Govern and evaluate	PP01, PP08	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I06; I07; I08; I09; I10; I11; I15; I27; I34; I40; I41; I42	World Health Organization. International Health Regulations (2005): text incorporating amendments adopted in 2014, 2022 and 2024 [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. Available from: https://apps.who.int/gb/bd/pdf_files/IHR_2014-2022-2024-en.pdf World Health Organization. Joint external evaluation tool: International Health Regulations (2005), third edition [Internet]. Geneva: World Health Organization; 2022 [cited 2026 Jul 19]. ISBN: 9789240051980. Available from: https://www.who.int/publications/i/item/9789240051980 World Health Organization. WHO benchmarks for strengthening health emergency capacities: support for the implementation of International Health Regulations and health emergency prevention, preparedness, response and resilience capacities [Internet]. Geneva: World Health Organization; 2023 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/b/72254 World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Katz R, Sorrell EM, Kornblet SA, Fischer JE. Global Health Security Agenda and the International Health Regulations: moving forward. Biosecur Bioterror. 2014;12(5):231-238. doi:10.1089/bsp.2014.0038. Centers for Disease Control and Prevention. Public health emergency preparedness and response capabilities: national standards for state, local, tribal and territorial public health [Internet]. Atlanta (GA): CDC; 2018 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/readiness/php/phep-emergency-preparedness-and-response-capabilities/index.html World Health Organization. WHO competency framework, risk communication and community engagement: for stronger and more inclusive health emergency programs [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240092501. Available from: https://www.who.int/publications/i/item/9789240092501 World Health Organization. Ethics and governance of artificial intelligence for health: WHO guidance [Internet]. Geneva: World Health Organization; 2021 [cited 2026 Jul 19]. ISBN: 9789240029200. Available from:
D02.2	Distinguish strategic, operational and technical authority and document delegations, decisions and accountability.	D02	Law, policy, ethics, equity and accountability	Foundations, governance and risk reduction	Universal core with context-adaptable national law	All phases	RP01-RP04, RP08-RP10, RP13, RP15	P4 Lead; P5 Govern and evaluate	PP01, PP08	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I06; I07; I08; I09; I10; I11; I15; I27; I34; I40; I41; I42	World Health Organization. International Health Regulations (2005): text incorporating amendments adopted in 2014, 2022 and 2024 [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. Available from: https://apps.who.int/gb/bd/pdf_files/IHR_2014-2022-2024-en.pdf World Health Organization. Joint external evaluation tool: International Health Regulations (2005), third edition [Internet]. Geneva: World Health Organization; 2022 [cited 2026 Jul 19]. ISBN: 9789240051980. Available from: https://www.who.int/publications/i/item/9789240051980 World Health Organization. WHO benchmarks for strengthening health emergency capacities: support for the implementation of International Health Regulations and health emergency prevention, preparedness, response and resilience capacities [Internet]. Geneva: World Health Organization; 2023 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/b/72254 World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Katz R, Sorrell EM, Kornblet SA, Fischer JE. Global Health Security Agenda and the International Health Regulations: moving forward. Biosecur Bioterror. 2014;12(5):231-238. doi:10.1089/bsp.2014.0038. Centers for Disease Control and Prevention. Public health emergency preparedness and response capabilities: national standards for state, local, tribal and territorial public health [Internet]. Atlanta (GA): CDC; 2018 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/readiness/php/phep-emergency-preparedness-and-response-capabilities/index.html World Health Organization. WHO competency framework, risk communication and community engagement: for stronger and more inclusive health emergency programs [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240092501. Available from: https://www.who.int/publications/i/item/9789240092501 World Health Organization. Ethics and governance of artificial intelligence for health: WHO guidance [Internet]. Geneva: World Health Organization; 2021 [cited 2026 Jul 19]. ISBN: 9789240029200. Available from:

outcome_c ode	outcome_statement	domain_c ode	domain_title	cluster	curriculum_layer	emergency_phases	role_pathways	terminal_proficiency	required_prod ucts	assessment_context	source_anchor_ids	source_anchor_citations
D02.3	Analyse necessity, proportionality, reasonableness, least-restrictive alternatives and time limits for public health measures.	D02	Law, policy, ethics, equity and accountability	Foundations, governance and risk reduction	Universal core with context-adaptable national law	All phases	RP01-RP04, RP08-RP10, RP13, RP15	P4 Lead; P5 Govern and evaluate	PP01, PP08	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I06; I07; I08; I09; I10; I11; I15; I27; I34; I40; I41; I42	World Health Organization. International Health Regulations (2005): text incorporating amendments adopted in 2014, 2022 and 2024 [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. Available from: https://apps.who.int/gb/bd/pdf_files/IHR_2014-2022-2024-en.pdf World Health Organization. Joint external evaluation tool: International Health Regulations (2005), third edition [Internet]. Geneva: World Health Organization; 2022 [cited 2026 Jul 19]. ISBN: 9789240051980. Available from: https://www.who.int/publications/i/item/9789240051980 World Health Organization. WHO benchmarks for strengthening health emergency capacities: support for the implementation of International Health Regulations and health emergency prevention, preparedness, response and resilience capacities [Internet]. Geneva: World Health Organization; 2023 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/b/72254 World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Katz R, Sorrell EM, Kornblet SA, Fischer JE. Global Health Security Agenda and the International Health Regulations: moving forward. Biosecur Bioterror. 2014;12(5):231-238. doi:10.1089/bsp.2014.0038. Centers for Disease Control and Prevention. Public health emergency preparedness and response capabilities: national standards for state, local, tribal and territorial public health [Internet]. Atlanta (GA): CDC; 2018 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/readiness/php/phep-emergency-preparedness-and-response-capabilities/index.html World Health Organization. WHO competency framework, risk communication and community engagement: for stronger and more inclusive health emergency programs [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240092501. Available from: https://www.who.int/publications/i/item/9789240092501 World Health Organization. Ethics and governance of artificial intelligence for health: WHO guidance [Internet]. Geneva: World Health Organization; 2021 [cited 2026 Jul 19]. ISBN: 9789240029200. Available from: https://www.who.int/publications/i/item/9789240029200
D02.4	Assess distributional effects on populations at disproportionate risk and incorporate reasonable accommodation and inclusive participation.	D02	Law, policy, ethics, equity and accountability	Foundations, governance and risk reduction	Universal core with context-adaptable national law	All phases	RP01-RP04, RP08-RP10, RP13, RP15	P4 Lead; P5 Govern and evaluate	PP01, PP08	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I06; I07; I08; I09; I10; I11; I15; I27; I34; I40; I41; I42	World Health Organization. International Health Regulations (2005): text incorporating amendments adopted in 2014, 2022 and 2024 [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. Available from: https://apps.who.int/gb/bd/pdf_files/IHR_2014-2022-2024-en.pdf World Health Organization. Joint external evaluation tool: International Health Regulations (2005), third edition [Internet]. Geneva: World Health Organization; 2022 [cited 2026 Jul 19]. ISBN: 9789240051980. Available from: https://www.who.int/publications/i/item/9789240051980 World Health Organization. WHO benchmarks for strengthening health emergency capacities: support for the implementation of International Health Regulations and health emergency prevention, preparedness, response and resilience capacities [Internet]. Geneva: World Health Organization; 2023 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/b/72254 World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Katz R, Sorrell EM, Kornblet SA, Fischer JE. Global Health Security Agenda and the International Health Regulations: moving forward. Biosecur Bioterror. 2014;12(5):231-238. doi:10.1089/bsp.2014.0038. Centers for Disease Control and Prevention. Public health emergency preparedness and response capabilities: national standards for state, local, tribal and territorial public health [Internet]. Atlanta (GA): CDC; 2018 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/readiness/php/phep-emergency-preparedness-and-response-capabilities/index.html World Health Organization. WHO competency framework, risk communication and community engagement: for stronger and more inclusive health emergency programs [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240092501. Available from: https://www.who.int/publications/i/item/9789240092501 World Health Organization. Ethics and governance of artificial intelligence for health: WHO guidance [Internet]. Geneva: World Health Organization; 2021 [cited 2026 Jul 19]. ISBN: 9789240029200. Available from: https://www.who.int/publications/i/item/9789240029200

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D02.5	Apply ethical frameworks to scarce-resource allocation, movement restrictions, surveillance, data sharing and workforce duty of care.	D02	Law, policy, ethics, equity and accountability	Foundations, governance and risk reduction	Universal core with context-adaptable national law	All phases	RP01-RP04, RP08-RP10, RP13, RP15	P4 Lead; P5 Govern and evaluate	PP01, PP08	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I06; I07; I08; I09; I10; I11; I15; I27; I34; I40; I41; I42	World Health Organization. International Health Regulations (2005): text incorporating amendments adopted in 2014, 2022 and 2024 [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. Available from: https://apps.who.int/gb/bd/pdf_files/IHR_2014-2022-2024-en.pdf World Health Organization. Joint external evaluation tool: International Health Regulations (2005), third edition [Internet]. Geneva: World Health Organization; 2022 [cited 2026 Jul 19]. ISBN: 9789240051980. Available from: https://www.who.int/publications/i/item/9789240051980 World Health Organization. WHO benchmarks for strengthening health emergency capacities: support for the implementation of International Health Regulations and health emergency prevention, preparedness, response and resilience capacities [Internet]. Geneva: World Health Organization; 2023 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/b/72254 World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Katz R, Sorrell EM, Kornblat SA, Fischer JE. Global Health Security Agenda and the International Health Regulations: moving forward. Biosecur Bioterror. 2014;12(5):231-238. doi:10.1089/bsp.2014.0038. Centers for Disease Control and Prevention. Public health emergency preparedness and response capabilities: national standards for state, local, tribal and territorial public health [Internet]. Atlanta (GA): CDC; 2018 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/readiness/php/phep-emergency-preparedness-and-response-capabilities/index.html World Health Organization. WHO competency framework, risk communication and community engagement: for stronger and more inclusive health emergency programs [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240092501. Available from: https://www.who.int/publications/i/item/9789240092501 World Health Organization. Ethics and governance of artificial intelligence for health: WHO guidance [Internet]. Geneva: World Health Organization; 2021 [cited 2026 Jul 19]. ISBN: 9789240029200. Available from: https://www.who.int/publications/i/item/9789240029200
D02.6	Prepare a legal and ethical decision memorandum with options, safeguards, review triggers and accountability arrangements.	D02	Law, policy, ethics, equity and accountability	Foundations, governance and risk reduction	Universal core with context-adaptable national law	All phases	RP01-RP04, RP08-RP10, RP13, RP15	P4 Lead; P5 Govern and evaluate	PP01, PP08	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I06; I07; I08; I09; I10; I11; I15; I27; I34; I40; I41; I42	World Health Organization. International Health Regulations (2005): text incorporating amendments adopted in 2014, 2022 and 2024 [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. Available from: https://apps.who.int/gb/bd/pdf_files/IHR_2014-2022-2024-en.pdf World Health Organization. Joint external evaluation tool: International Health Regulations (2005), third edition [Internet]. Geneva: World Health Organization; 2022 [cited 2026 Jul 19]. ISBN: 9789240051980. Available from: https://www.who.int/publications/i/item/9789240051980 World Health Organization. WHO benchmarks for strengthening health emergency capacities: support for the implementation of International Health Regulations and health emergency prevention, preparedness, response and resilience capacities [Internet]. Geneva: World Health Organization; 2023 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/b/72254 World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Katz R, Sorrell EM, Kornblat SA, Fischer JE. Global Health Security Agenda and the International Health Regulations: moving forward. Biosecur Bioterror. 2014;12(5):231-238. doi:10.1089/bsp.2014.0038. Centers for Disease Control and Prevention. Public health emergency preparedness and response capabilities: national standards for state, local, tribal and territorial public health [Internet]. Atlanta (GA): CDC; 2018 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/readiness/php/phep-emergency-preparedness-and-response-capabilities/index.html World Health Organization. WHO competency framework, risk communication and community engagement: for stronger and more inclusive health emergency programs [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240092501. Available from: https://www.who.int/publications/i/item/9789240092501 World Health Organization. Ethics and governance of artificial intelligence for health: WHO guidance [Internet]. Geneva: World Health Organization; 2021 [cited 2026 Jul 19]. ISBN: 9789240029200. Available from: https://www.who.int/publications/i/item/9789240029200

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D03.1	Identify biological, chemical, radiological, nuclear, environmental, climate, technological, humanitarian and deliberate hazards relevant to a jurisdiction.	D03	Hazard, vulnerability, capacity and risk assessment	Foundations, governance and risk reduction	Universal core with context-adaptable hazards	Prevention, mitigation, preparedness, response	RP01-RP04, RP06, RP09, RP11, RP15	P4 Lead; P5 Govern and evaluate	PP01, PP02	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I01; I02; I03; I07; I08; I09; I10; I11; I14; I22; I25; I46	World Health Organization. Health Emergency and Disaster Risk Management Framework [Internet]. Geneva: World Health Organization; 2019 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/9789241516181 United Nations Office for Disaster Risk Reduction. Sendai Framework for Disaster Risk Reduction 2015-2030 [Internet]. 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D03.2	Assess exposure, vulnerability, coping capacity, adaptive capacity and populations at disproportionate risk.	D03	Hazard, vulnerability, capacity and risk assessment	Foundations, governance and risk reduction	Universal core with context-adaptable hazards	Prevention, mitigation, preparedness, response	RP01-RP04, RP06, RP09, RP11, RP15	P4 Lead; P5 Govern and evaluate	PP01, PP02	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I01; I02; I03; I07; I08; I09; I10; I11; I14; I22; I25; I46	World Health Organization. Health Emergency and Disaster Risk Management Framework [Internet]. Geneva: World Health Organization; 2019 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/9789241516181 United Nations Office for Disaster Risk Reduction. Sendai Framework for Disaster Risk Reduction 2015-2030 [Internet]. Geneva: United Nations; 2015 [cited 2026 Jul 19]. Available from: https://www.undrr.org/publication/sendai-framework-disaster-risk-reduction-2015-2030 World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization. Joint external evaluation tool: International Health Regulations (2005), third edition [Internet]. Geneva: World Health Organization; 2022 [cited 2026 Jul 19]. ISBN: 9789240051980. Available from: https://www.who.int/publications/i/item/9789240051980 World Health Organization. WHO benchmarks for strengthening health emergency capacities: support for the implementation of International Health Regulations and health emergency prevention, preparedness, response and resilience capacities [Internet]. Geneva: World Health Organization; 2023 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/b/72254 World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Nelson C, Lurie N, Wasserman J, Zakowski S. Conceptualizing and defining public health emergency preparedness. Am J Public Health. 2007;97(Suppl 1):S9-S11. doi:10.2105/AJPH.2007.114496. Olu O, Usman A, Kalambay K, Anyangwe S, Voyi K, Orach CG, Azazh A, Mapatano MA, Nsenga N, Manga L, Woldetsadik S, Nguessan F, Benson A. What should the African health workforce know about disasters? Proposed competencies for strenthening public health disaster risk manaaement education in Africa.

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D03.3	Use qualitative, semi-quantitative or quantitative methods to estimate likelihood, severity, uncertainty and confidence.	D03	Hazard, vulnerability, capacity and risk assessment	Foundations, governance and risk reduction	Universal core with context-adaptable hazards	Prevention, mitigation, preparedness, response	RP01-RP04, RP06, RP09, RP11, RP15	P4 Lead; P5 Govern and evaluate	PP01, PP02	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I01; I02; I03; I07; I08; I09; I10; I11; I14; I22; I25; I46	World Health Organization. Health Emergency and Disaster Risk Management Framework [Internet]. Geneva: World Health Organization; 2019 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/9789241516181 United Nations Office for Disaster Risk Reduction. Sendai Framework for Disaster Risk Reduction 2015-2030 [Internet]. Geneva: United Nations; 2015 [cited 2026 Jul 19]. 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D03.4	Construct and maintain risk registers, hazard profiles, maps and capability-gap assessments.	D03	Hazard, vulnerability, capacity and risk assessment	Foundations, governance and risk reduction	Universal core with context-adaptable hazards	Prevention, mitigation, preparedness, response	RP01-RP04, RP06, RP09, RP11, RP15	P4 Lead; P5 Govern and evaluate	PP01, PP02	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I01; I02; I03; I07; I08; I09; I10; I11; I14; I22; I25; I46	World Health Organization. Health Emergency and Disaster Risk Management Framework [Internet]. Geneva: World Health Organization; 2019 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/9789241516181 United Nations Office for Disaster Risk Reduction. Sendai Framework for Disaster Risk Reduction 2015-2030 [Internet]. Geneva: United Nations; 2015 [cited 2026 Jul 19]. Available from: https://www.undrr.org/publication/sendai-framework-disaster-risk-reduction-2015-2030 World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization. Joint external evaluation tool: International Health Regulations (2005), third edition [Internet]. Geneva: World Health Organization; 2022 [cited 2026 Jul 19]. ISBN: 9789240051980. Available from: https://www.who.int/publications/i/item/9789240051980 World Health Organization. WHO benchmarks for strengthening health emergency capacities: support for the implementation of International Health Regulations and health emergency prevention, preparedness, response and resilience capacities [Internet]. Geneva: World Health Organization; 2023 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/b/72254 World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Nelson C, Lurie N, Wasserman J, Zakowski S. Conceptualizing and defining public health emergency preparedness. Am J Public Health. 2007;97(Suppl 1):S9-S11. doi:10.2105/AJPH.2007.114496. Olu O, Usman A, Kalambay K, Anyangwe S, Voyi K, Orach CG, Azazh A, Mapatano MA, Nsenga N, Manga L, Woldetsadik S, Nguessan F, Benson A. What should the African health workforce know about disasters? Proposed competencies for strenthening public health disaster risk manaaement education in Africa.

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D03.5	Conduct rapid risk assessment during an evolving event and update conclusions as evidence changes.	D03	Hazard, vulnerability, capacity and risk assessment	Foundations, governance and risk reduction	Universal core with context-adaptable hazards	Prevention, mitigation, preparedness, response	RP01-RP04, RP06, RP09, RP11, RP15	P4 Lead; P5 Govern and evaluate	PP01, PP02	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I01; I02; I03; I07; I08; I09; I10; I11; I14; I22; I25; I46	World Health Organization. Health Emergency and Disaster Risk Management Framework [Internet]. Geneva: World Health Organization; 2019 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/9789241516181 United Nations Office for Disaster Risk Reduction. Sendai Framework for Disaster Risk Reduction 2015-2030 [Internet]. Geneva: United Nations; 2015 [cited 2026 Jul 19]. 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D03.6	Prioritize risks transparently and communicate implications for mitigation, preparedness, financing and operations.	D03	Hazard, vulnerability, capacity and risk assessment	Foundations, governance and risk reduction	Universal core with context-adaptable hazards	Prevention, mitigation, preparedness, response	RP01-RP04, RP06, RP09, RP11, RP15	P4 Lead; P5 Govern and evaluate	PP01, PP02	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I01; I02; I03; I07; I08; I09; I10; I11; I14; I22; I25; I46	World Health Organization. Health Emergency and Disaster Risk Management Framework [Internet]. Geneva: World Health Organization; 2019 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/9789241516181 United Nations Office for Disaster Risk Reduction. Sendai Framework for Disaster Risk Reduction 2015-2030 [Internet]. Geneva: United Nations; 2015 [cited 2026 Jul 19]. Available from: https://www.undrr.org/publication/sendai-framework-disaster-risk-reduction-2015-2030 World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization. Joint external evaluation tool: International Health Regulations (2005), third edition [Internet]. Geneva: World Health Organization; 2022 [cited 2026 Jul 19]. ISBN: 9789240051980. Available from: https://www.who.int/publications/i/item/9789240051980 World Health Organization. WHO benchmarks for strengthening health emergency capacities: support for the implementation of International Health Regulations and health emergency prevention, preparedness, response and resilience capacities [Internet]. Geneva: World Health Organization; 2023 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/b/72254 World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Nelson C, Lurie N, Wasserman J, Zakowski S. Conceptualizing and defining public health emergency preparedness. Am J Public Health. 2007;97(Suppl 1):S9-S11. doi:10.2105/AJPH.2007.114496. Olu O, Usman A, Kalambay K, Anyangwe S, Voyi K, Orach CG, Azazh A, Mapatano MA, Nsenga N, Manga L, Woldetsadik S, Nguessan F, Benson A. What should the African health workforce know about disasters? Proposed competencies for strenthening public health disaster risk manaaement education in Africa.

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D04.1	Distinguish prevention, mitigation, preparedness, response, recovery, adaptation and residual risk using operational examples.	D04	Prevention, mitigation, resilience and protective action	Foundations, governance and risk reduction	Universal core with context-adaptable interventions	Prevention, mitigation, response, recovery	RP01, RP02, RP05, RP12, RP13, RP15, RP16	P4 Lead; P5 Govern and evaluate	PP02, PP11	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I01; I02; I03; I13; I14; I22; I27; I44	World Health Organization. Health Emergency and Disaster Risk Management Framework [Internet]. Geneva: World Health Organization; 2019 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/9789241516181 United Nations Office for Disaster Risk Reduction. Sendai Framework for Disaster Risk Reduction 2015-2030 [Internet]. Geneva: United Nations; 2015 [cited 2026 Jul 19]. Available from: https://www.undrr.org/publication/sendai-framework-disaster-risk-reduction-2015-2030 World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre Rose DA, Murthy S, Brooks J, Bryant J. The evolution of public health emergency management as a field of practice. Am J Public Health. 2017;107(S2):S126-S133. doi:10.2105/AJPH.2017.303947. Nelson C, Lurie N, Wasserman J, Zakowski S. Conceptualizing and defining public health emergency preparedness. Am J Public Health. 2007;97(Suppl 1):S9-S11. doi:10.2105/AJPH.2007.114496. Olu O, Usman A, Kalambay K, Anyangwe S, Voyi K, Orach CG, Azazh A, Mapatano MA, Nsenga N, Manga L, Woldetsadik S, Nguessan F, Benson A. What should the African health workforce know about disasters? Proposed competencies for strengthening public health disaster risk management education in Africa. BMC Med Educ. 2018;18:60. doi:10.1186/s12909-018-1163-9. Centers for Disease Control and Prevention. Public health emergency preparedness and response capabilities: national standards for state, local, tribal and territorial public health [Internet]. Atlanta (GA): CDC; 2018 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/readiness/php/phep-emergency-preparedness-and-response-capabilities/index.html World Health Organization. Everyone's business: whole-of-society action to manage health risks and reduce socioeconomic impacts of emergencies and disasters [Internet]. Geneva: World Health Organization; 2021 [cited 2026 Jul 19]. ISBN: 9789240015081. Available from: https://www.who.int/publications/i/item/9789240015081
D04.2	Identify structural, non-structural, biomedical, environmental, behavioral, social and health-system mitigation options.	D04	Prevention, mitigation, resilience and protective action	Foundations, governance and risk reduction	Universal core with context-adaptable interventions	Prevention, mitigation, response, recovery	RP01, RP02, RP05, RP12, RP13, RP15, RP16	P4 Lead; P5 Govern and evaluate	PP02, PP11	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I01; I02; I03; I13; I14; I22; I27; I44	World Health Organization. Health Emergency and Disaster Risk Management Framework [Internet]. Geneva: World Health Organization; 2019 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/9789241516181 United Nations Office for Disaster Risk Reduction. Sendai Framework for Disaster Risk Reduction 2015-2030 [Internet]. Geneva: United Nations; 2015 [cited 2026 Jul 19]. Available from: https://www.undrr.org/publication/sendai-framework-disaster-risk-reduction-2015-2030 World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre Rose DA, Murthy S, Brooks J, Bryant J. The evolution of public health emergency management as a field of practice. Am J Public Health. 2017;107(S2):S126-S133. doi:10.2105/AJPH.2017.303947. Nelson C, Lurie N, Wasserman J, Zakowski S. Conceptualizing and defining public health emergency preparedness. Am J Public Health. 2007;97(Suppl 1):S9-S11. doi:10.2105/AJPH.2007.114496. Olu O, Usman A, Kalambay K, Anyangwe S, Voyi K, Orach CG, Azazh A, Mapatano MA, Nsenga N, Manga L, Woldetsadik S, Nguessan F, Benson A. What should the African health workforce know about disasters? Proposed competencies for strengthening public health disaster risk management education in Africa. BMC Med Educ. 2018;18:60. doi:10.1186/s12909-018-1163-9. Centers for Disease Control and Prevention. Public health emergency preparedness and response capabilities: national standards for state, local, tribal and territorial public health [Internet]. Atlanta (GA): CDC; 2018 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/readiness/php/phep-emergency-preparedness-and-response-capabilities/index.html World Health Organization. Everyone's business: whole-of-society action to manage health risks and reduce socioeconomic impacts of emergencies and disasters [Internet]. Geneva: World Health Organization; 2021 [cited 2026 Jul 19]. ISBN: 9789240015081. Available from: https://www.who.int/publications/i/item/9789240015081

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D04.3	Compare options according to expected effectiveness, feasibility, cost, legality, ethics, equity, acceptability, sustainability and time to benefit.	D04	Prevention, mitigation, resilience and protective action	Foundations, governance and risk reduction	Universal core with context-adaptable interventions	Prevention, mitigation, response, recovery	RP01, RP02, RP05, RP12, RP13, RP15, RP16	P4 Lead; P5 Govern and evaluate	PP02, PP11	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I01; I02; I03; I13; I14; I22; I27; I44	World Health Organization. Health Emergency and Disaster Risk Management Framework [Internet]. Geneva: World Health Organization; 2019 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/9789241516181 United Nations Office for Disaster Risk Reduction. Sendai Framework for Disaster Risk Reduction 2015-2030 [Internet]. Geneva: United Nations; 2015 [cited 2026 Jul 19]. Available from: https://www.undrr.org/publication/sendai-framework-disaster-risk-reduction-2015-2030 World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre Rose DA, Murthy S, Brooks J, Bryant J. The evolution of public health emergency management as a field of practice. Am J Public Health. 2017;107(S2):S126-S133. doi:10.2105/AJPH.2017.303947. Nelson C, Lurie N, Wasserman J, Zakowski S. Conceptualizing and defining public health emergency preparedness. Am J Public Health. 2007;97(Suppl 1):S9-S11. doi:10.2105/AJPH.2007.114496. Olu O, Usman A, Kalambay K, Anyangwe S, Voyi K, Orach CG, Azazh A, Mapatano MA, Nsenga N, Manga L, Woldetsadik S, Nguessan F, Benson A. What should the African health workforce know about disasters? Proposed competencies for strengthening public health disaster risk management education in Africa. BMC Med Educ. 2018;18:60. doi:10.1186/s12909-018-1163-9. Centers for Disease Control and Prevention. Public health emergency preparedness and response capabilities: national standards for state, local, tribal and territorial public health [Internet]. Atlanta (GA): CDC; 2018 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/readiness/php/phep-emergency-preparedness-and-response-capabilities/index.html World Health Organization. Everyone's business: whole-of-society action to manage health risks and reduce socioeconomic impacts of emergencies and disasters [Internet]. Geneva: World Health Organization; 2021 [cited 2026 Jul 19]. ISBN: 9789240015081. Available from: https://www.who.int/publications/i/item/9789240015081
D04.4	Design a multisectoral mitigation and resilience plan linked to the documented risk profile.	D04	Prevention, mitigation, resilience and protective action	Foundations, governance and risk reduction	Universal core with context-adaptable interventions	Prevention, mitigation, response, recovery	RP01, RP02, RP05, RP12, RP13, RP15, RP16	P4 Lead; P5 Govern and evaluate	PP02, PP11	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I01; I02; I03; I13; I14; I22; I27; I44	World Health Organization. Health Emergency and Disaster Risk Management Framework [Internet]. Geneva: World Health Organization; 2019 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/9789241516181 United Nations Office for Disaster Risk Reduction. Sendai Framework for Disaster Risk Reduction 2015-2030 [Internet]. Geneva: United Nations; 2015 [cited 2026 Jul 19]. Available from: https://www.undrr.org/publication/sendai-framework-disaster-risk-reduction-2015-2030 World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre Rose DA, Murthy S, Brooks J, Bryant J. The evolution of public health emergency management as a field of practice. Am J Public Health. 2017;107(S2):S126-S133. doi:10.2105/AJPH.2017.303947. Nelson C, Lurie N, Wasserman J, Zakowski S. Conceptualizing and defining public health emergency preparedness. Am J Public Health. 2007;97(Suppl 1):S9-S11. doi:10.2105/AJPH.2007.114496. Olu O, Usman A, Kalambay K, Anyangwe S, Voyi K, Orach CG, Azazh A, Mapatano MA, Nsenga N, Manga L, Woldetsadik S, Nguessan F, Benson A. What should the African health workforce know about disasters? Proposed competencies for strengthening public health disaster risk management education in Africa. BMC Med Educ. 2018;18:60. doi:10.1186/s12909-018-1163-9. Centers for Disease Control and Prevention. Public health emergency preparedness and response capabilities: national standards for state, local, tribal and territorial public health [Internet]. Atlanta (GA): CDC; 2018 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/readiness/php/phep-emergency-preparedness-and-response-capabilities/index.html World Health Organization. Everyone's business: whole-of-society action to manage health risks and reduce socioeconomic impacts of emergencies and disasters [Internet]. Geneva: World Health Organization; 2021 [cited 2026 Jul 19]. ISBN: 9789240015081. Available from: https://www.who.int/publications/i/item/9789240015081

outcome_c ode	outcome_statement	domain_c ode	domain_title	cluster	curriculum_layer	emergency_phases	role_pathways	terminal_proficiency	required_prod ucts	assessment_context	source_anchor_ids	source_anchor_citations
D04.5	Integrate continuity, redundancy, resilient infrastructure and protection of populations at disproportionate risk.	D04	Prevention, mitigation, resilience and protective action	Foundations, governance and risk reduction	Universal core with context-adaptable interventions	Prevention, mitigation, response, recovery	RP01, RP02, RP05, RP12, RP13, RP15, RP16	P4 Lead; P5 Govern and evaluate	PP02, PP11	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I01; I02; I03; I13; I14; I22; I27; I44	World Health Organization. Health Emergency and Disaster Risk Management Framework [Internet]. Geneva: World Health Organization; 2019 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/9789241516181 United Nations Office for Disaster Risk Reduction. Sendai Framework for Disaster Risk Reduction 2015-2030 [Internet]. Geneva: United Nations; 2015 [cited 2026 Jul 19]. Available from: https://www.undrr.org/publication/sendai-framework-disaster-risk-reduction-2015-2030 World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre Rose DA, Murthy S, Brooks J, Bryant J. The evolution of public health emergency management as a field of practice. Am J Public Health. 2017;107(S2):S126-S133. doi:10.2105/AJPH.2017.303947. Nelson C, Lurie N, Wasserman J, Zakowski S. Conceptualizing and defining public health emergency preparedness. Am J Public Health. 2007;97(Suppl 1):S9-S11. doi:10.2105/AJPH.2007.114496. Olu O, Usman A, Kalambay K, Anyangwe S, Voyi K, Orach CG, Azazh A, Mapatano MA, Nsenga N, Manga L, Woldetsadik S, Nguessan F, Benson A. What should the African health workforce know about disasters? Proposed competencies for strengthening public health disaster risk management education in Africa. BMC Med Educ. 2018;18:60. doi:10.1186/s12909-018-1163-9. Centers for Disease Control and Prevention. Public health emergency preparedness and response capabilities: national standards for state, local, tribal and territorial public health [Internet]. Atlanta (GA): CDC; 2018 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/readiness/php/phep-emergency-preparedness-and-response-capabilities/index.html World Health Organization. Everyone's business: whole-of-society action to manage health risks and reduce socioeconomic impacts of emergencies and disasters [Internet]. Geneva: World Health Organization; 2021 [cited 2026 Jul 19]. ISBN: 9789240015081. Available from: https://www.who.int/publications/i/item/9789240015081
D04.6	Monitor implementation, evaluate effectiveness and unintended effects, estimate residual risk and revise measures.	D04	Prevention, mitigation, resilience and protective action	Foundations, governance and risk reduction	Universal core with context-adaptable interventions	Prevention, mitigation, response, recovery	RP01, RP02, RP05, RP12, RP13, RP15, RP16	P4 Lead; P5 Govern and evaluate	PP02, PP11	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I01; I02; I03; I13; I14; I22; I27; I44	World Health Organization. Health Emergency and Disaster Risk Management Framework [Internet]. Geneva: World Health Organization; 2019 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/9789241516181 United Nations Office for Disaster Risk Reduction. Sendai Framework for Disaster Risk Reduction 2015-2030 [Internet]. Geneva: United Nations; 2015 [cited 2026 Jul 19]. Available from: https://www.undrr.org/publication/sendai-framework-disaster-risk-reduction-2015-2030 World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre Rose DA, Murthy S, Brooks J, Bryant J. The evolution of public health emergency management as a field of practice. Am J Public Health. 2017;107(S2):S126-S133. doi:10.2105/AJPH.2017.303947. Nelson C, Lurie N, Wasserman J, Zakowski S. Conceptualizing and defining public health emergency preparedness. Am J Public Health. 2007;97(Suppl 1):S9-S11. doi:10.2105/AJPH.2007.114496. Olu O, Usman A, Kalambay K, Anyangwe S, Voyi K, Orach CG, Azazh A, Mapatano MA, Nsenga N, Manga L, Woldetsadik S, Nguessan F, Benson A. What should the African health workforce know about disasters? Proposed competencies for strengthening public health disaster risk management education in Africa. BMC Med Educ. 2018;18:60. doi:10.1186/s12909-018-1163-9. Centers for Disease Control and Prevention. Public health emergency preparedness and response capabilities: national standards for state, local, tribal and territorial public health [Internet]. Atlanta (GA): CDC; 2018 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/readiness/php/phep-emergency-preparedness-and-response-capabilities/index.html World Health Organization. Everyone's business: whole-of-society action to manage health risks and reduce socioeconomic impacts of emergencies and disasters [Internet]. Geneva: World Health Organization; 2021 [cited 2026 Jul 19]. ISBN: 9789240015081. Available from: https://www.who.int/publications/i/item/9789240015081

outcome_c ode	outcome_statement	domain_c ode	domain_title	cluster	curriculum_layer	emergency_phases	role_pathways	terminal_proficiency	required_prod ucts	assessment_context	source_anchor_ids	source_anchor_citations
D05.1	Map governance, mandates, accountability and coordination across government levels and sectors.	D05	Governance, partnerships and emergency financing	Foundations, governance and risk reduction	Universal core with context-adaptable institutions	All phases	RP01-RP04, RP08, RP13, RP15	P5 Govern and evaluate	PP01, PP02, PP03, PP07, PP11	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I03; I06; I07; I08; I09; I10; I11; I15; I25; I27; I46; A27	World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization. International Health Regulations (2005): text incorporating amendments adopted in 2014, 2022 and 2024 [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. Available from: https://apps.who.int/gb/bd/pdf_files/IHR_2014-2022-2024-en.pdf World Health Organization. Joint external evaluation tool: International Health Regulations (2005), third edition [Internet]. Geneva: World Health Organization; 2022 [cited 2026 Jul 19]. ISBN: 9789240051980. Available from: https://www.who.int/publications/i/item/9789240051980 World Health Organization. WHO benchmarks for strengthening health emergency capacities: support for the implementation of International Health Regulations and health emergency prevention, preparedness, response and resilience capacities [Internet]. Geneva: World Health Organization; 2023 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/b/72254 World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Katz R, Sorrell EM, Kornblet SA, Fischer JE. Global Health Security Agenda and the International Health Regulations: moving forward. Biosecur Bioterror. 2014;12(5):231-238. doi:10.1089/bsp.2014.0038. European Centre for Disease Prevention and Control. Public health emergency preparedness: core competencies for European Union Member States [Internet]. Stockholm: ECDC; 2017 [cited 2026 Jul 19]. doi:10.2900/049462. Centers for Disease Control and Prevention. Public health emergency preparedness and response capabilities: national standards for state, local, tribal and territorial public health [Internet]. Atlanta (GA): CDC; 2018 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/readiness/bhp/bhep-emergencv-preparedness-and-
D05.2	Design steering, policy, technical and operational coordination arrangements with clear decision rights.	D05	Governance, partnerships and emergency financing	Foundations, governance and risk reduction	Universal core with context-adaptable institutions	All phases	RP01-RP04, RP08, RP13, RP15	P5 Govern and evaluate	PP01, PP02, PP03, PP07, PP11	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I03; I06; I07; I08; I09; I10; I11; I15; I25; I27; I46; A27	World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization. International Health Regulations (2005): text incorporating amendments adopted in 2014, 2022 and 2024 [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. Available from: https://apps.who.int/gb/bd/pdf_files/IHR_2014-2022-2024-en.pdf World Health Organization. Joint external evaluation tool: International Health Regulations (2005), third edition [Internet]. Geneva: World Health Organization; 2022 [cited 2026 Jul 19]. ISBN: 9789240051980. Available from: https://www.who.int/publications/i/item/9789240051980 World Health Organization. WHO benchmarks for strengthening health emergency capacities: support for the implementation of International Health Regulations and health emergency prevention, preparedness, response and resilience capacities [Internet]. Geneva: World Health Organization; 2023 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/b/72254 World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Katz R, Sorrell EM, Kornblet SA, Fischer JE. Global Health Security Agenda and the International Health Regulations: moving forward. Biosecur Bioterror. 2014;12(5):231-238. doi:10.1089/bsp.2014.0038. European Centre for Disease Prevention and Control. Public health emergency preparedness: core competencies for European Union Member States [Internet]. Stockholm: ECDC; 2017 [cited 2026 Jul 19]. doi:10.2900/049462. Centers for Disease Control and Prevention. Public health emergency preparedness and response capabilities: national standards for state, local, tribal and territorial public health [Internet]. Atlanta (GA): CDC; 2018 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/readiness/bhp/bhep-emergencv-preparedness-and-

outcome_c ode	outcome_statement	domain_c ode	domain_title	cluster	curriculum_layer	emergency_phases	role_pathways	terminal_proficiency	required_prod ucts	assessment_context	source_anchor_ids	source_anchor_citations
D05.3	Develop agreements, memoranda of understanding, mutual-aid arrangements and partner protocols before emergencies.	D05	Governance, partnerships and emergency financing	Foundations, governance and risk reduction	Universal core with context-adaptable institutions	All phases	RP01-RP04, RP08, RP13, RP15	P5 Govern and evaluate	PP01, PP02, PP03, PP07, PP11	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I03; I06; I07; I08; I09; I10; I11; I15; I25; I27; I46; A27	World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization. International Health Regulations (2005): text incorporating amendments adopted in 2014, 2022 and 2024 [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. Available from: https://apps.who.int/gb/bd/pdf_files/IHR_2014-2022-2024-en.pdf World Health Organization. Joint external evaluation tool: International Health Regulations (2005), third edition [Internet]. Geneva: World Health Organization; 2022 [cited 2026 Jul 19]. ISBN: 9789240051980. Available from: https://www.who.int/publications/i/item/9789240051980 World Health Organization. WHO benchmarks for strengthening health emergency capacities: support for the implementation of International Health Regulations and health emergency prevention, preparedness, response and resilience capacities [Internet]. Geneva: World Health Organization; 2023 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/b/72254 World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Katz R, Sorrell EM, Kornblet SA, Fischer JE. Global Health Security Agenda and the International Health Regulations: moving forward. Biosecur Bioterror. 2014;12(5):231-238. doi:10.1089/bsp.2014.0038. European Centre for Disease Prevention and Control. Public health emergency preparedness: core competencies for European Union Member States [Internet]. Stockholm: ECDC; 2017 [cited 2026 Jul 19]. doi:10.2900/049462. Centers for Disease Control and Prevention. Public health emergency preparedness and response capabilities: national standards for state, local, tribal and territorial public health [Internet]. Atlanta (GA): CDC; 2018 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/readiness/bhp/bhep-emergencv-preparedness-and-
D05.4	Estimate preparedness, mitigation, response and recovery resource requirements and identify flexible financing mechanisms.	D05	Governance, partnerships and emergency financing	Foundations, governance and risk reduction	Universal core with context-adaptable institutions	All phases	RP01-RP04, RP08, RP13, RP15	P5 Govern and evaluate	PP01, PP02, PP03, PP07, PP11	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I03; I06; I07; I08; I09; I10; I11; I15; I25; I27; I46; A27	World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization. International Health Regulations (2005): text incorporating amendments adopted in 2014, 2022 and 2024 [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. Available from: https://apps.who.int/gb/bd/pdf_files/IHR_2014-2022-2024-en.pdf World Health Organization. Joint external evaluation tool: International Health Regulations (2005), third edition [Internet]. Geneva: World Health Organization; 2022 [cited 2026 Jul 19]. ISBN: 9789240051980. Available from: https://www.who.int/publications/i/item/9789240051980 World Health Organization. WHO benchmarks for strengthening health emergency capacities: support for the implementation of International Health Regulations and health emergency prevention, preparedness, response and resilience capacities [Internet]. Geneva: World Health Organization; 2023 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/b/72254 World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Katz R, Sorrell EM, Kornblet SA, Fischer JE. Global Health Security Agenda and the International Health Regulations: moving forward. Biosecur Bioterror. 2014;12(5):231-238. doi:10.1089/bsp.2014.0038. European Centre for Disease Prevention and Control. Public health emergency preparedness: core competencies for European Union Member States [Internet]. Stockholm: ECDC; 2017 [cited 2026 Jul 19]. doi:10.2900/049462. Centers for Disease Control and Prevention. Public health emergency preparedness and response capabilities: national standards for state, local, tribal and territorial public health [Internet]. Atlanta (GA): CDC; 2018 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/readiness/bhp/bhep-emergencv-preparedness-and-

outcome_c ode	outcome_statement	domain_c ode	domain_title	cluster	curriculum_layer	emergency_phases	role_pathways	terminal_proficiency	required_prod ucts	assessment_context	source_anchor_ids	source_anchor_citations
D05.5	Manage partner contributions, donor requirements and external assistance while protecting national ownership and avoiding duplication.	D05	Governance, partnerships and emergency financing	Foundations, governance and risk reduction	Universal core with context-adaptable institutions	All phases	RP01-RP04, RP08, RP13, RP15	P5 Govern and evaluate	PP01, PP02, PP03, PP07, PP11	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I03; I06; I07; I08; I09; I10; I11; I15; I25; I27; I46; A27	World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization. International Health Regulations (2005): text incorporating amendments adopted in 2014, 2022 and 2024 [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. Available from: https://apps.who.int/gb/bd/pdf_files/IHR_2014-2022-2024-en.pdf World Health Organization. Joint external evaluation tool: International Health Regulations (2005), third edition [Internet]. Geneva: World Health Organization; 2022 [cited 2026 Jul 19]. ISBN: 9789240051980. Available from: https://www.who.int/publications/i/item/9789240051980 World Health Organization. WHO benchmarks for strengthening health emergency capacities: support for the implementation of International Health Regulations and health emergency prevention, preparedness, response and resilience capacities [Internet]. Geneva: World Health Organization; 2023 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/b/72254 World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Katz R, Sorrell EM, Kornblet SA, Fischer JE. Global Health Security Agenda and the International Health Regulations: moving forward. Biosecur Bioterror. 2014;12(5):231-238. doi:10.1089/bsp.2014.0038. European Centre for Disease Prevention and Control. Public health emergency preparedness: core competencies for European Union Member States [Internet]. Stockholm: ECDC; 2017 [cited 2026 Jul 19]. doi:10.2900/049462. Centers for Disease Control and Prevention. Public health emergency preparedness and response capabilities: national standards for state, local, tribal and territorial public health [Internet]. Atlanta (GA): CDC; 2018 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/readiness/bhp/bhep-emergencv-preparedness-and-
D05.6	Establish transparent financial, performance and public-accountability reporting.	D05	Governance, partnerships and emergency financing	Foundations, governance and risk reduction	Universal core with context-adaptable institutions	All phases	RP01-RP04, RP08, RP13, RP15	P5 Govern and evaluate	PP01, PP02, PP03, PP07, PP11	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I03; I06; I07; I08; I09; I10; I11; I15; I25; I27; I46; A27	World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization. International Health Regulations (2005): text incorporating amendments adopted in 2014, 2022 and 2024 [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. Available from: https://apps.who.int/gb/bd/pdf_files/IHR_2014-2022-2024-en.pdf World Health Organization. Joint external evaluation tool: International Health Regulations (2005), third edition [Internet]. Geneva: World Health Organization; 2022 [cited 2026 Jul 19]. ISBN: 9789240051980. Available from: https://www.who.int/publications/i/item/9789240051980 World Health Organization. WHO benchmarks for strengthening health emergency capacities: support for the implementation of International Health Regulations and health emergency prevention, preparedness, response and resilience capacities [Internet]. Geneva: World Health Organization; 2023 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/b/72254 World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Katz R, Sorrell EM, Kornblet SA, Fischer JE. Global Health Security Agenda and the International Health Regulations: moving forward. Biosecur Bioterror. 2014;12(5):231-238. doi:10.1089/bsp.2014.0038. European Centre for Disease Prevention and Control. Public health emergency preparedness: core competencies for European Union Member States [Internet]. Stockholm: ECDC; 2017 [cited 2026 Jul 19]. doi:10.2900/049462. Centers for Disease Control and Prevention. Public health emergency preparedness and response capabilities: national standards for state, local, tribal and territorial public health [Internet]. Atlanta (GA): CDC; 2018 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/readiness/bhp/bhep-emergencv-preparedness-and-

outcome_c ode	outcome_statement	domain_c ode	domain_title	cluster	curriculum_layer	emergency_phases	role_pathways	terminal_proficiency	required_prod ucts	assessment_context	source_anchor_ids	source_anchor_citations
D06.5	Align national, subnational, district, facility, laboratory and community plans and resolve contradictions.	D06	Preparedness, contingency and operational planning	Preparedness and operational readiness	Universal core with context-adaptable plans	Preparedness, readiness, response, recovery	RP01-RP04, RP06-RP08, RP13-RP15	P4 Lead; P5 Govern and evaluate	PP01, PP03, PP05, PP07, PP11	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I01; I02; I03; I06; I07; I08; I09; I10; I11; I27; I29; I30; I31; I32; I44	World Health Organization. Health Emergency and Disaster Risk Management Framework [Internet]. Geneva: World Health Organization; 2019 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/9789241516181 United Nations Office for Disaster Risk Reduction. Sendai Framework for Disaster Risk Reduction 2015-2030 [Internet]. Geneva: United Nations; 2015 [cited 2026 Jul 19]. Available from: https://www.undrr.org/publication/sendai-framework-disaster-risk-reduction-2015-2030 World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization. International Health Regulations (2005): text incorporating amendments adopted in 2014, 2022 and 2024 [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. Available from: https://apps.who.int/gb/bd/pdf_files/IHR_2014-2022-2024-en.pdf World Health Organization. Joint external evaluation tool: International Health Regulations (2005), third edition [Internet]. Geneva: World Health Organization; 2022 [cited 2026 Jul 19]. ISBN: 9789240051980. Available from: https://www.who.int/publications/i/item/9789240051980 World Health Organization. WHO benchmarks for strengthening health emergency capacities: support for the implementation of International Health Regulations and health emergency prevention, preparedness, response and resilience capacities [Internet]. Geneva: World Health Organization; 2023 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/b/72254 World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Centers for Disease Control and Prevention. Public health emergency preparedness and response capabilities: national standards for state, local, tribal and territorial public health [Internet]. Atlanta (GA): CDC; 2018 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/publichealthlandmarkers/2018-2024/
D06.6	Validate plans through review, consultation, exercise and corrective action and maintain a controlled revision cycle.	D06	Preparedness, contingency and operational planning	Preparedness and operational readiness	Universal core with context-adaptable plans	Preparedness, readiness, response, recovery	RP01-RP04, RP06-RP08, RP13-RP15	P4 Lead; P5 Govern and evaluate	PP01, PP03, PP05, PP07, PP11	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I01; I02; I03; I06; I07; I08; I09; I10; I11; I27; I29; I30; I31; I32; I44	World Health Organization. Health Emergency and Disaster Risk Management Framework [Internet]. Geneva: World Health Organization; 2019 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/9789241516181 United Nations Office for Disaster Risk Reduction. Sendai Framework for Disaster Risk Reduction 2015-2030 [Internet]. Geneva: United Nations; 2015 [cited 2026 Jul 19]. Available from: https://www.undrr.org/publication/sendai-framework-disaster-risk-reduction-2015-2030 World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization. International Health Regulations (2005): text incorporating amendments adopted in 2014, 2022 and 2024 [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. Available from: https://apps.who.int/gb/bd/pdf_files/IHR_2014-2022-2024-en.pdf World Health Organization. Joint external evaluation tool: International Health Regulations (2005), third edition [Internet]. Geneva: World Health Organization; 2022 [cited 2026 Jul 19]. ISBN: 9789240051980. Available from: https://www.who.int/publications/i/item/9789240051980 World Health Organization. WHO benchmarks for strengthening health emergency capacities: support for the implementation of International Health Regulations and health emergency prevention, preparedness, response and resilience capacities [Internet]. Geneva: World Health Organization; 2023 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/b/72254 World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Centers for Disease Control and Prevention. Public health emergency preparedness and response capabilities: national standards for state, local, tribal and territorial public health [Internet]. Atlanta (GA): CDC; 2018 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/publichealthlandmarkers/2018-2024/

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D07.1	Define priority intelligence requirements, users, decisions, indicators, sources and reporting rhythms.	D07	Surveillance, public health intelligence and rapid risk assessment	Preparedness and operational readiness	Universal core	Preparedness, readiness, response, recovery	RP02-RP06, RP09-RP12, RP16	P4 Lead; P5 Govern and evaluate	PP01, PP03, PP06, PP07, PP08, PP09, PP10	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I06; I07; I08; I09; I10; I11; I27; I36; I37; I43	World Health Organization. International Health Regulations (2005): text incorporating amendments adopted in 2014, 2022 and 2024 [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. Available from: https://apps.who.int/gb/bd/pdf_files/IHR_2014-2022-2024-en.pdf World Health Organization. Joint external evaluation tool: International Health Regulations (2005), third edition [Internet]. Geneva: World Health Organization; 2022 [cited 2026 Jul 19]. ISBN: 9789240051980. Available from: https://www.who.int/publications/i/item/9789240051980 World Health Organization. WHO benchmarks for strengthening health emergency capacities: support for the implementation of International Health Regulations and health emergency prevention, preparedness, response and resilience capacities [Internet]. Geneva: World Health Organization; 2023 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/b/72254 World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Centers for Disease Control and Prevention. Public health emergency preparedness and response capabilities: national standards for state, local, tribal and territorial public health [Internet]. Atlanta (GA): CDC; 2018 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/readiness/php/phep-emergency-preparedness-and-response-capabilities/index.html World Health Organization. Public health intelligence competency framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240115408. Available from: https://www.who.int/publications/i/item/9789240115408 World Health Organization. Public health intelligence curriculum [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240115385. Available from: https://www.who.int/publications/i/item/9789240115385 World Health Organization, Food and Agriculture Organization of the United Nations, World Organisation for Animal Health. Guidance for One Health field epidemioloav curriculum development [Internet]. Geneva: World Health
D07.2	Integrate indicator-based, event-based, community, laboratory, clinical, genomic, environmental, open-source and partner information.	D07	Surveillance, public health intelligence and rapid risk assessment	Preparedness and operational readiness	Universal core	Preparedness, readiness, response, recovery	RP02-RP06, RP09-RP12, RP16	P4 Lead; P5 Govern and evaluate	PP01, PP03, PP06, PP07, PP08, PP09, PP10	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I06; I07; I08; I09; I10; I11; I27; I36; I37; I43	World Health Organization. International Health Regulations (2005): text incorporating amendments adopted in 2014, 2022 and 2024 [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. Available from: https://apps.who.int/gb/bd/pdf_files/IHR_2014-2022-2024-en.pdf World Health Organization. Joint external evaluation tool: International Health Regulations (2005), third edition [Internet]. Geneva: World Health Organization; 2022 [cited 2026 Jul 19]. ISBN: 9789240051980. Available from: https://www.who.int/publications/i/item/9789240051980 World Health Organization. WHO benchmarks for strengthening health emergency capacities: support for the implementation of International Health Regulations and health emergency prevention, preparedness, response and resilience capacities [Internet]. Geneva: World Health Organization; 2023 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/b/72254 World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Centers for Disease Control and Prevention. Public health emergency preparedness and response capabilities: national standards for state, local, tribal and territorial public health [Internet]. Atlanta (GA): CDC; 2018 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/readiness/php/phep-emergency-preparedness-and-response-capabilities/index.html World Health Organization. Public health intelligence competency framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240115408. Available from: https://www.who.int/publications/i/item/9789240115408 World Health Organization. Public health intelligence curriculum [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240115385. Available from: https://www.who.int/publications/i/item/9789240115385 World Health Organization, Food and Agriculture Organization of the United Nations, World Organisation for Animal Health. Guidance for One Health field epidemioloav curriculum development [Internet]. Geneva: World Health

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D07.3	Detect, triage, verify, authenticate and document signals and maintain the signal-alert-event process.	D07	Surveillance, public health intelligence and rapid risk assessment	Preparedness and operational readiness	Universal core	Preparedness, readiness, response, recovery	RP02-RP06, RP09-RP12, RP16	P4 Lead; P5 Govern and evaluate	PP01, PP03, PP06, PP07, PP08, PP09, PP10	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I06; I07; I08; I09; I10; I11; I27; I36; I37; I43	World Health Organization. International Health Regulations (2005): text incorporating amendments adopted in 2014, 2022 and 2024 [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. Available from: https://apps.who.int/gb/bd/pdf_files/IHR_2014-2022-2024-en.pdf World Health Organization. Joint external evaluation tool: International Health Regulations (2005), third edition [Internet]. Geneva: World Health Organization; 2022 [cited 2026 Jul 19]. ISBN: 9789240051980. Available from: https://www.who.int/publications/i/item/9789240051980 World Health Organization. WHO benchmarks for strengthening health emergency capacities: support for the implementation of International Health Regulations and health emergency prevention, preparedness, response and resilience capacities [Internet]. Geneva: World Health Organization; 2023 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/b/72254 World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Centers for Disease Control and Prevention. Public health emergency preparedness and response capabilities: national standards for state, local, tribal and territorial public health [Internet]. Atlanta (GA): CDC; 2018 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/readiness/php/phep-emergency-preparedness-and-response-capabilities/index.html World Health Organization. Public health intelligence competency framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240115408. Available from: https://www.who.int/publications/i/item/9789240115408 World Health Organization. Public health intelligence curriculum [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240115385. Available from: https://www.who.int/publications/i/item/9789240115385 World Health Organization, Food and Agriculture Organization of the United Nations, World Organisation for Animal Health. Guidance for One Health field epidemioloav curriculum development [Internet]. Geneva: World Health
D07.4	Conduct rapid risk assessment and update it as evidence, context and response capacity change.	D07	Surveillance, public health intelligence and rapid risk assessment	Preparedness and operational readiness	Universal core	Preparedness, readiness, response, recovery	RP02-RP06, RP09-RP12, RP16	P4 Lead; P5 Govern and evaluate	PP01, PP03, PP06, PP07, PP08, PP09, PP10	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I06; I07; I08; I09; I10; I11; I27; I36; I37; I43	World Health Organization. International Health Regulations (2005): text incorporating amendments adopted in 2014, 2022 and 2024 [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. Available from: https://apps.who.int/gb/bd/pdf_files/IHR_2014-2022-2024-en.pdf World Health Organization. Joint external evaluation tool: International Health Regulations (2005), third edition [Internet]. Geneva: World Health Organization; 2022 [cited 2026 Jul 19]. ISBN: 9789240051980. Available from: https://www.who.int/publications/i/item/9789240051980 World Health Organization. WHO benchmarks for strengthening health emergency capacities: support for the implementation of International Health Regulations and health emergency prevention, preparedness, response and resilience capacities [Internet]. Geneva: World Health Organization; 2023 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/b/72254 World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Centers for Disease Control and Prevention. Public health emergency preparedness and response capabilities: national standards for state, local, tribal and territorial public health [Internet]. Atlanta (GA): CDC; 2018 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/readiness/php/phep-emergency-preparedness-and-response-capabilities/index.html World Health Organization. Public health intelligence competency framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240115408. Available from: https://www.who.int/publications/i/item/9789240115408 World Health Organization. Public health intelligence curriculum [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240115385. Available from: https://www.who.int/publications/i/item/9789240115385 World Health Organization, Food and Agriculture Organization of the United Nations, World Organisation for Animal Health. Guidance for One Health field epidemioloav curriculum development [Internet]. Geneva: World Health

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D07.5	Assess completeness, timeliness, validity, representativeness, bias and uncertainty.	D07	Surveillance, public health intelligence and rapid risk assessment	Preparedness and operational readiness	Universal core	Preparedness, readiness, response, recovery	RP02-RP06, RP09-RP12, RP16	P4 Lead; P5 Govern and evaluate	PP01, PP03, PP06, PP07, PP08, PP09, PP10	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I06; I07; I08; I09; I10; I11; I27; I36; I37; I43	World Health Organization. International Health Regulations (2005): text incorporating amendments adopted in 2014, 2022 and 2024 [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. Available from: https://apps.who.int/gb/bd/pdf_files/IHR_2014-2022-2024-en.pdf World Health Organization. Joint external evaluation tool: International Health Regulations (2005), third edition [Internet]. Geneva: World Health Organization; 2022 [cited 2026 Jul 19]. ISBN: 9789240051980. Available from: https://www.who.int/publications/i/item/9789240051980 World Health Organization. WHO benchmarks for strengthening health emergency capacities: support for the implementation of International Health Regulations and health emergency prevention, preparedness, response and resilience capacities [Internet]. Geneva: World Health Organization; 2023 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/b/72254 World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Centers for Disease Control and Prevention. Public health emergency preparedness and response capabilities: national standards for state, local, tribal and territorial public health [Internet]. Atlanta (GA): CDC; 2018 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/readiness/php/phep-emergency-preparedness-and-response-capabilities/index.html World Health Organization. Public health intelligence competency framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240115408. Available from: https://www.who.int/publications/i/item/9789240115408 World Health Organization. Public health intelligence curriculum [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240115385. Available from: https://www.who.int/publications/i/item/9789240115385 World Health Organization, Food and Agriculture Organization of the United Nations, World Organisation for Animal Health. Guidance for One Health field epidemioloav curriculum development [Internet]. Geneva: World Health
D07.6	Produce alerts, briefings, dashboards and situation analyses that state evidence, confidence, implications and recommended action.	D07	Surveillance, public health intelligence and rapid risk assessment	Preparedness and operational readiness	Universal core	Preparedness, readiness, response, recovery	RP02-RP06, RP09-RP12, RP16	P4 Lead; P5 Govern and evaluate	PP01, PP03, PP06, PP07, PP08, PP09, PP10	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I06; I07; I08; I09; I10; I11; I27; I36; I37; I43	World Health Organization. International Health Regulations (2005): text incorporating amendments adopted in 2014, 2022 and 2024 [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. Available from: https://apps.who.int/gb/bd/pdf_files/IHR_2014-2022-2024-en.pdf World Health Organization. Joint external evaluation tool: International Health Regulations (2005), third edition [Internet]. Geneva: World Health Organization; 2022 [cited 2026 Jul 19]. ISBN: 9789240051980. Available from: https://www.who.int/publications/i/item/9789240051980 World Health Organization. WHO benchmarks for strengthening health emergency capacities: support for the implementation of International Health Regulations and health emergency prevention, preparedness, response and resilience capacities [Internet]. Geneva: World Health Organization; 2023 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/b/72254 World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Centers for Disease Control and Prevention. Public health emergency preparedness and response capabilities: national standards for state, local, tribal and territorial public health [Internet]. Atlanta (GA): CDC; 2018 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/readiness/php/phep-emergency-preparedness-and-response-capabilities/index.html World Health Organization. Public health intelligence competency framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240115408. Available from: https://www.who.int/publications/i/item/9789240115408 World Health Organization. Public health intelligence curriculum [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240115385. Available from: https://www.who.int/publications/i/item/9789240115385 World Health Organization, Food and Agriculture Organization of the United Nations, World Organisation for Animal Health. Guidance for One Health field epidemioloav curriculum development [Internet]. Geneva: World Health

outcome_c ode	outcome_statement	domain_c ode	domain_title	cluster	curriculum_layer	emergency_phases	role_pathways	terminal_proficiency	required_prod ucts	assessment_context	source_anchor_ids	source_anchor_citations
D08.1	Conduct workforce mapping and determine staffing, surge, shift and succession requirements.	D08	Emergency workforce, rapid response teams, deployment safety, wellbeing and mental health and psychosocial support	Preparedness and operational readiness	Universal core with role-pathway depth	Preparedness, readiness, response, recovery	RP01-RP05, RP07, RP11, RP13, RP16	P3 Coordinate; P4 Lead	PP03, PP05, PP07, PP09	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I03; I07; I08; I09; I10; I11; I20; I21; I22; I23; I25; I27; I38; I18; A27; I45; I50	World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization. Joint external evaluation tool: International Health Regulations (2005), third edition [Internet]. Geneva: World Health Organization; 2022 [cited 2026 Jul 19]. ISBN: 9789240051980. Available from: https://www.who.int/publications/i/item/9789240051980 World Health Organization. WHO benchmarks for strengthening health emergency capacities: support for the implementation of International Health Regulations and health emergency prevention, preparedness, response and resilience capacities [Internet]. Geneva: World Health Organization; 2023 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/b/72254 World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Eteng WEO, Collard E, Anebonam U, Magodi S, Kamara N, Guyasa M, Mankoula W. Designing a competency-based curriculum for an advanced training program in public health emergency management: a stepwise, mixed method approach, 2023. BMC Med Educ. 2024;24:1344. doi:10.1186/s12909-024-06341-x. Getaneh MW, Pascal A, Luka-Lawal RK, Kutubana MK, Bunting-Graden JA, Ezembro ETC, Tadicha SD, Essone PN, Magodi S, Anebonam U, Mankoula W, Oboma WE. The Africa Centres for Disease Control public health emergency management fellowship: insights from the inaugural cohort. Front Public Health. 2025;13:1444354. doi:10.3389/fpubh.2025.1444354. Olu O, Usman A, Kalambay K, Anyangwe S, Voyi K, Orach CG, Azazh A, Mapatano MA, Nsenga N, Manga L, Woldetsadik S, Nguessan F, Benson A. What should the African health workforce know about disasters? Proposed competencies for strengthening public health disaster risk management education in Africa. BMC Med Educ. 2018;18:60. doi:10.1186/s12909-018-1163-9. Huna
D08.2	Define position competencies, credentialling, roster standards and just-in-time orientation.	D08	Emergency workforce, rapid response teams, deployment safety, wellbeing and mental health and psychosocial support	Preparedness and operational readiness	Universal core with role-pathway depth	Preparedness, readiness, response, recovery	RP01-RP05, RP07, RP11, RP13, RP16	P3 Coordinate; P4 Lead	PP03, PP05, PP07, PP09	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I03; I07; I08; I09; I10; I11; I20; I21; I22; I23; I25; I27; I38; I18; A27; I45; I50	World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization. Joint external evaluation tool: International Health Regulations (2005), third edition [Internet]. Geneva: World Health Organization; 2022 [cited 2026 Jul 19]. ISBN: 9789240051980. Available from: https://www.who.int/publications/i/item/9789240051980 World Health Organization. WHO benchmarks for strengthening health emergency capacities: support for the implementation of International Health Regulations and health emergency prevention, preparedness, response and resilience capacities [Internet]. Geneva: World Health Organization; 2023 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/b/72254 World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Eteng WEO, Collard E, Anebonam U, Magodi S, Kamara N, Guyasa M, Mankoula W. Designing a competency-based curriculum for an advanced training program in public health emergency management: a stepwise, mixed method approach, 2023. BMC Med Educ. 2024;24:1344. doi:10.1186/s12909-024-06341-x. Getaneh MW, Pascal A, Luka-Lawal RK, Kutubana MK, Bunting-Graden JA, Ezembro ETC, Tadicha SD, Essone PN, Magodi S, Anebonam U, Mankoula W, Oboma WE. The Africa Centres for Disease Control public health emergency management fellowship: insights from the inaugural cohort. Front Public Health. 2025;13:1444354. doi:10.3389/fpubh.2025.1444354. Olu O, Usman A, Kalambay K, Anyangwe S, Voyi K, Orach CG, Azazh A, Mapatano MA, Nsenga N, Manga L, Woldetsadik S, Nguessan F, Benson A. What should the African health workforce know about disasters? Proposed competencies for strengthening public health disaster risk management education in Africa. BMC Med Educ. 2018;18:60. doi:10.1186/s12909-018-1163-9. Huna

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D08.3	Assemble multidisciplinary rapid response teams with clear leadership, terms of reference and reporting lines.	D08	Emergency workforce, rapid response teams, deployment safety, wellbeing and mental health and psychosocial support	Preparedness and operational readiness	Universal core with role-pathway depth	Preparedness, readiness, response, recovery	RP01-RP05, RP07, RP11, RP13, RP16	P3 Coordinate; P4 Lead	PP03, PP05, PP07, PP09	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I03; I07; I08; I09; I10; I11; I20; I21; I22; I23; I25; I27; I38; I18; A27; I45; I50	World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization. Joint external evaluation tool: International Health Regulations (2005), third edition [Internet]. Geneva: World Health Organization; 2022 [cited 2026 Jul 19]. ISBN: 9789240051980. Available from: https://www.who.int/publications/i/item/9789240051980 World Health Organization. WHO benchmarks for strengthening health emergency capacities: support for the implementation of International Health Regulations and health emergency prevention, preparedness, response and resilience capacities [Internet]. Geneva: World Health Organization; 2023 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/b/72254 World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Eteng WEO, Collard E, Anebonam U, Magodi S, Kamara N, Guyasa M, Mankoula W. Designing a competency-based curriculum for an advanced training program in public health emergency management: a stepwise, mixed method approach, 2023. BMC Med Educ. 2024;24:1344. doi:10.1186/s12909-024-06341-x. Getaneh MW, Pascal A, Luka-Lawal RK, Kutubana MK, Bunting-Graden JA, Ezembro ETC, Tadicha SD, Essone PN, Magodi S, Anebonam U, Mankoula W, Oboma WE. The Africa Centres for Disease Control public health emergency management fellowship: insights from the inaugural cohort. Front Public Health. 2025;13:1444354. doi:10.3389/fpubh.2025.1444354. Olu O, Usman A, Kalambay K, Anyangwe S, Voyi K, Orach CG, Azazh A, Mapatano MA, Nsenga N, Manga L, Woldetsadik S, Nguessan F, Benson A. What should the African health workforce know about disasters? Proposed competencies for strengthening public health disaster risk management education in Africa. BMC Med Educ. 2018;18:60. doi:10.1186/s12909-018-1163-9. Huna
D08.4	Plan mobilization, transport, equipment, security, infection prevention, medical support and insurance or compensation.	D08	Emergency workforce, rapid response teams, deployment safety, wellbeing and mental health and psychosocial support	Preparedness and operational readiness	Universal core with role-pathway depth	Preparedness, readiness, response, recovery	RP01-RP05, RP07, RP11, RP13, RP16	P3 Coordinate; P4 Lead	PP03, PP05, PP07, PP09	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I03; I07; I08; I09; I10; I11; I20; I21; I22; I23; I25; I27; I38; I18; A27; I45; I50	World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization. Joint external evaluation tool: International Health Regulations (2005), third edition [Internet]. Geneva: World Health Organization; 2022 [cited 2026 Jul 19]. ISBN: 9789240051980. Available from: https://www.who.int/publications/i/item/9789240051980 World Health Organization. WHO benchmarks for strengthening health emergency capacities: support for the implementation of International Health Regulations and health emergency prevention, preparedness, response and resilience capacities [Internet]. Geneva: World Health Organization; 2023 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/b/72254 World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Eteng WEO, Collard E, Anebonam U, Magodi S, Kamara N, Guyasa M, Mankoula W. Designing a competency-based curriculum for an advanced training program in public health emergency management: a stepwise, mixed method approach, 2023. BMC Med Educ. 2024;24:1344. doi:10.1186/s12909-024-06341-x. Getaneh MW, Pascal A, Luka-Lawal RK, Kutubana MK, Bunting-Graden JA, Ezembro ETC, Tadicha SD, Essone PN, Magodi S, Anebonam U, Mankoula W, Oboma WE. The Africa Centres for Disease Control public health emergency management fellowship: insights from the inaugural cohort. Front Public Health. 2025;13:1444354. doi:10.3389/fpubh.2025.1444354. Olu O, Usman A, Kalambay K, Anyangwe S, Voyi K, Orach CG, Azazh A, Mapatano MA, Nsenga N, Manga L, Woldetsadik S, Nguessan F, Benson A. What should the African health workforce know about disasters? Proposed competencies for strengthening public health disaster risk management education in Africa. BMC Med Educ. 2018;18:60. doi:10.1186/s12909-018-1163-9. Huna

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D08.5	Monitor workload, fatigue, psychosocial wellbeing, conduct, safeguarding and team performance.	D08	Emergency workforce, rapid response teams, deployment safety, wellbeing and mental health and psychosocial support	Preparedness and operational readiness	Universal core with role-pathway depth	Preparedness, readiness, response, recovery	RP01-RP05, RP07, RP11, RP13, RP16	P3 Coordinate; P4 Lead	PP03, PP05, PP07, PP09	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I03; I07; I08; I09; I10; I11; I20; I21; I22; I23; I25; I27; I38; I18; A27; I45; I50	World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization. Joint external evaluation tool: International Health Regulations (2005), third edition [Internet]. Geneva: World Health Organization; 2022 [cited 2026 Jul 19]. ISBN: 9789240051980. Available from: https://www.who.int/publications/i/item/9789240051980 World Health Organization. WHO benchmarks for strengthening health emergency capacities: support for the implementation of International Health Regulations and health emergency prevention, preparedness, response and resilience capacities [Internet]. Geneva: World Health Organization; 2023 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/b/72254 World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Eteng WEO, Collard E, Anebonam U, Magodi S, Kamara N, Guyasa M, Mankoula W. Designing a competency-based curriculum for an advanced training program in public health emergency management: a stepwise, mixed method approach, 2023. BMC Med Educ. 2024;24:1344. doi:10.1186/s12909-024-06341-x. Getaneh MW, Pascal A, Luka-Lawal RK, Kutubana MK, Bunting-Graden JA, Ezembro ETC, Tadicha SD, Essone PN, Magodi S, Anebonam U, Mankoula W, Oboma WE. The Africa Centres for Disease Control public health emergency management fellowship: insights from the inaugural cohort. Front Public Health. 2025;13:1444354. doi:10.3389/fpubh.2025.1444354. Olu O, Usman A, Kalambay K, Anyangwe S, Voyi K, Orach CG, Azazh A, Mapatano MA, Nsenga N, Manga L, Woldetsadik S, Nguessan F, Benson A. What should the African health workforce know about disasters? Proposed competencies for strengthening public health disaster risk management education in Africa. BMC Med Educ. 2018;18:60. doi:10.1186/s12909-018-1163-9. Huna
D08.6	Manage handover, demobilization, post-deployment review, follow-up and workforce retention.	D08	Emergency workforce, rapid response teams, deployment safety, wellbeing and mental health and psychosocial support	Preparedness and operational readiness	Universal core with role-pathway depth	Preparedness, readiness, response, recovery	RP01-RP05, RP07, RP11, RP13, RP16	P3 Coordinate; P4 Lead	PP03, PP05, PP07, PP09	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I03; I07; I08; I09; I10; I11; I20; I21; I22; I23; I25; I27; I38; I18; A27; I45; I50	World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization. Joint external evaluation tool: International Health Regulations (2005), third edition [Internet]. Geneva: World Health Organization; 2022 [cited 2026 Jul 19]. ISBN: 9789240051980. Available from: https://www.who.int/publications/i/item/9789240051980 World Health Organization. WHO benchmarks for strengthening health emergency capacities: support for the implementation of International Health Regulations and health emergency prevention, preparedness, response and resilience capacities [Internet]. Geneva: World Health Organization; 2023 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/b/72254 World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Eteng WEO, Collard E, Anebonam U, Magodi S, Kamara N, Guyasa M, Mankoula W. Designing a competency-based curriculum for an advanced training program in public health emergency management: a stepwise, mixed method approach, 2023. BMC Med Educ. 2024;24:1344. doi:10.1186/s12909-024-06341-x. Getaneh MW, Pascal A, Luka-Lawal RK, Kutubana MK, Bunting-Graden JA, Ezembro ETC, Tadicha SD, Essone PN, Magodi S, Anebonam U, Mankoula W, Oboma WE. The Africa Centres for Disease Control public health emergency management fellowship: insights from the inaugural cohort. Front Public Health. 2025;13:1444354. doi:10.3389/fpubh.2025.1444354. Olu O, Usman A, Kalambay K, Anyangwe S, Voyi K, Orach CG, Azazh A, Mapatano MA, Nsenga N, Manga L, Woldetsadik S, Nguessan F, Benson A. What should the African health workforce know about disasters? Proposed competencies for strengthening public health disaster risk management education in Africa. BMC Med Educ. 2018;18:60. doi:10.1186/s12909-018-1163-9. Huna

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D09.1	Conduct a training-needs and exercise-needs assessment linked to risks, plans, roles and capability gaps.	D09	Training, simulation, exercises and readiness evaluation	Preparedness and operational readiness	Universal core with specialist role pathway	Preparedness, readiness, learning	RP01-RP04, RP14	P4 Lead; P5 Govern and evaluate	PP03, PP05, PP12	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I03; I08; I20; I21; I22; I23; I25; I27; I29; I30; I31; I32	World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization. WHO benchmarks for strengthening health emergency capacities: support for the implementation of International Health Regulations and health emergency prevention, preparedness, response and resilience capacities [Internet]. Geneva: World Health Organization; 2023 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/b/72254 Eteng WEO, Collard E, Anebonam U, Magodi S, Kamara N, Guyasa M, Mankoula W. Designing a competency-based curriculum for an advanced training program in public health emergency management: a stepwise, mixed method approach, 2023. BMC Med Educ. 2024;24:1344. doi:10.1186/s12909-024-06341-x. Getaneh MW, Pascal A, Luka-Lawal RK, Kutubana MK, Bunting-Graden JA, Ezembro ETC, Tadicha SD, Essone PN, Magodi S, Anebonam U, Mankoula W, Oboma WE. The Africa Centres for Disease Control public health emergency management fellowship: insights from the inaugural cohort. Front Public Health. 2025;13:1444354. doi:10.3389/fpubh.2025.1444354. Olu O, Usman A, Kalambay K, Anyangwe S, Voyi K, Orach CG, Azazh A, Mapatano MA, Nsenga N, Manga L, Woldetsadik S, Nguessan F, Benson A. What should the African health workforce know about disasters? Proposed competencies for strengthening public health disaster risk management education in Africa. BMC Med Educ. 2018;18:60. doi:10.1186/s12909-018-1163-9. Hung KKC, MacDermot MK, Hui TSI, Chan SY, Mashino S, Mok CPY, Leung PH, Kayano R, Abrahams J, Wong CS, Chan EYY, Graham CA. Mapping study for health emergency and disaster risk management competencies and curricula: literature review and cross-sectional survey. Global Health. 2024;20:15. doi:10.1186/s12992-023-01010-y. European Centre for Disease Prevention and Control. Public health emergency preparedness: core competencies for European Union Member States [Internet]. Stockholm: ECDC; 2017 [cited 2026 Jul 19]. doi:10.2900/049462. Centers for Disease Control and Prevention. Public health emergency preparedness and response capabilities: national standards for state, local, tribal and territorial public health [Internet]. Atlanta (GA): CDC; 2018 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/readiness/php/phep-emergency-preparedness-and-response-capabilities/index.html Federal Emergency Management Agency. National Incident Management System. 3rd ed. [Internet]. Washington (DC): United States Department of Homeland Security; 2017 [cited 2026 Jul 19]. Available from: https://www.fema.gov/emergency
D09.2	Select suitable orientations, drills, tabletop, functional or full-scale exercises and define measurable objectives.	D09	Training, simulation, exercises and readiness evaluation	Preparedness and operational readiness	Universal core with specialist role pathway	Preparedness, readiness, learning	RP01-RP04, RP14	P4 Lead; P5 Govern and evaluate	PP03, PP05, PP12	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I03; I08; I20; I21; I22; I23; I25; I27; I29; I30; I31; I32	World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization. WHO benchmarks for strengthening health emergency capacities: support for the implementation of International Health Regulations and health emergency prevention, preparedness, response and resilience capacities [Internet]. Geneva: World Health Organization; 2023 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/b/72254 Eteng WEO, Collard E, Anebonam U, Magodi S, Kamara N, Guyasa M, Mankoula W. Designing a competency-based curriculum for an advanced training program in public health emergency management: a stepwise, mixed method approach, 2023. BMC Med Educ. 2024;24:1344. doi:10.1186/s12909-024-06341-x. Getaneh MW, Pascal A, Luka-Lawal RK, Kutubana MK, Bunting-Graden JA, Ezembro ETC, Tadicha SD, Essone PN, Magodi S, Anebonam U, Mankoula W, Oboma WE. The Africa Centres for Disease Control public health emergency management fellowship: insights from the inaugural cohort. Front Public Health. 2025;13:1444354. doi:10.3389/fpubh.2025.1444354. Olu O, Usman A, Kalambay K, Anyangwe S, Voyi K, Orach CG, Azazh A, Mapatano MA, Nsenga N, Manga L, Woldetsadik S, Nguessan F, Benson A. What should the African health workforce know about disasters? Proposed competencies for strengthening public health disaster risk management education in Africa. BMC Med Educ. 2018;18:60. doi:10.1186/s12909-018-1163-9. Hung KKC, MacDermot MK, Hui TSI, Chan SY, Mashino S, Mok CPY, Leung PH, Kayano R, Abrahams J, Wong CS, Chan EYY, Graham CA. Mapping study for health emergency and disaster risk management competencies and curricula: literature review and cross-sectional survey. Global Health. 2024;20:15. doi:10.1186/s12992-023-01010-y. European Centre for Disease Prevention and Control. Public health emergency preparedness: core competencies for European Union Member States [Internet]. Stockholm: ECDC; 2017 [cited 2026 Jul 19]. doi:10.2900/049462. Centers for Disease Control and Prevention. Public health emergency preparedness and response capabilities: national standards for state, local, tribal and territorial public health [Internet]. Atlanta (GA): CDC; 2018 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/readiness/php/phep-emergency-preparedness-and-response-capabilities/index.html Federal Emergency Management Agency. National Incident Management System. 3rd ed. [Internet]. Washington (DC): United States Department of Homeland Security; 2017 [cited 2026 Jul 19]. Available from: https://www.fema.gov/emergency

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D09.3	Develop scenarios, timelines, injects, master scenario events lists, participant materials and controller/evaluator guidance.	D09	Training, simulation, exercises and readiness evaluation	Preparedness and operational readiness	Universal core with specialist role pathway	Preparedness, readiness, learning	RP01-RP04, RP14	P4 Lead; P5 Govern and evaluate	PP03, PP05, PP12	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I03; I08; I20; I21; I22; I23; I25; I27; I29; I30; I31; I32	World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization. WHO benchmarks for strengthening health emergency capacities: support for the implementation of International Health Regulations and health emergency prevention, preparedness, response and resilience capacities [Internet]. Geneva: World Health Organization; 2023 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/b/72254 Eteng WEO. Collard E, Anebonam U, Magodi S, Kamara N, Guyasa M, Mankoula W. Designing a competency-based curriculum for an advanced training program in public health emergency management: a stepwise, mixed method approach, 2023. BMC Med Educ. 2024;24:1344. doi:10.1186/s12909-024-06341-x. Getaneh MW, Pascal A, Luka-Lawal RK, Kutubana MK, Bunting-Graden JA, Ezembro ETC, Tadicha SD, Essone PN, Magodi S, Anebonam U, Mankoula W, Oboma WE. The Africa Centres for Disease Control public health emergency management fellowship: insights from the inaugural cohort. Front Public Health. 2025;13:1444354. doi:10.3389/fpubh.2025.1444354. Olu O, Usman A, Kalambay K, Anyangwe S, Voyi K, Orach CG, Azazh A, Mapatano MA, Nsenga N, Manga L, Woldetsadik S, Nguessan F, Benson A. What should the African health workforce know about disasters? Proposed competencies for strengthening public health disaster risk management education in Africa. BMC Med Educ. 2018;18:60. doi:10.1186/s12909-018-1163-9. Hung KKC, MacDermot MK, Hui TSI, Chan SY, Mashino S, Mok CPY, Leung PH, Kayano R, Abrahams J, Wong CS, Chan EYY, Graham CA. Mapping study for health emergency and disaster risk management competencies and curricula: literature review and cross-sectional survey. Global Health. 2024;20:15. doi:10.1186/s12992-023-01010-y. European Centre for Disease Prevention and Control. Public health emergency preparedness: core competencies for European Union Member States [Internet]. Stockholm: ECDC; 2017 [cited 2026 Jul 19]. doi:10.2900/049462. Centers for Disease Control and Prevention. Public health emergency preparedness and response capabilities: national standards for state, local, tribal and territorial public health [Internet]. Atlanta (GA): CDC; 2018 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/readiness/php/phep-emergency-preparedness-and-response-capabilities/index.html Federal Emergency Management Agency. National Incident Management System. 3rd ed. [Internet]. Washington (DC): United States Department of Homeland Security; 2017 [cited 2026 Jul 19]. Available from: https://www.fema.gov/emergency
D09.4	Conduct exercises safely and realistically while protecting confidentiality, operations and participants.	D09	Training, simulation, exercises and readiness evaluation	Preparedness and operational readiness	Universal core with specialist role pathway	Preparedness, readiness, learning	RP01-RP04, RP14	P4 Lead; P5 Govern and evaluate	PP03, PP05, PP12	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I03; I08; I20; I21; I22; I23; I25; I27; I29; I30; I31; I32	World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization. WHO benchmarks for strengthening health emergency capacities: support for the implementation of International Health Regulations and health emergency prevention, preparedness, response and resilience capacities [Internet]. Geneva: World Health Organization; 2023 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/b/72254 Eteng WEO. Collard E, Anebonam U, Magodi S, Kamara N, Guyasa M, Mankoula W. Designing a competency-based curriculum for an advanced training program in public health emergency management: a stepwise, mixed method approach, 2023. BMC Med Educ. 2024;24:1344. doi:10.1186/s12909-024-06341-x. Getaneh MW, Pascal A, Luka-Lawal RK, Kutubana MK, Bunting-Graden JA, Ezembro ETC, Tadicha SD, Essone PN, Magodi S, Anebonam U, Mankoula W, Oboma WE. The Africa Centres for Disease Control public health emergency management fellowship: insights from the inaugural cohort. Front Public Health. 2025;13:1444354. doi:10.3389/fpubh.2025.1444354. Olu O, Usman A, Kalambay K, Anyangwe S, Voyi K, Orach CG, Azazh A, Mapatano MA, Nsenga N, Manga L, Woldetsadik S, Nguessan F, Benson A. What should the African health workforce know about disasters? Proposed competencies for strengthening public health disaster risk management education in Africa. BMC Med Educ. 2018;18:60. doi:10.1186/s12909-018-1163-9. Hung KKC, MacDermot MK, Hui TSI, Chan SY, Mashino S, Mok CPY, Leung PH, Kayano R, Abrahams J, Wong CS, Chan EYY, Graham CA. Mapping study for health emergency and disaster risk management competencies and curricula: literature review and cross-sectional survey. Global Health. 2024;20:15. doi:10.1186/s12992-023-01010-y. European Centre for Disease Prevention and Control. Public health emergency preparedness: core competencies for European Union Member States [Internet]. Stockholm: ECDC; 2017 [cited 2026 Jul 19]. doi:10.2900/049462. Centers for Disease Control and Prevention. Public health emergency preparedness and response capabilities: national standards for state, local, tribal and territorial public health [Internet]. Atlanta (GA): CDC; 2018 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/readiness/php/phep-emergency-preparedness-and-response-capabilities/index.html Federal Emergency Management Agency. National Incident Management System. 3rd ed. [Internet]. Washington (DC): United States Department of Homeland Security; 2017 [cited 2026 Jul 19]. Available from: https://www.fema.gov/emergency

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D09.5	Collect performance evidence, facilitate hotwash and after-action review, and produce an improvement plan.	D09	Training, simulation, exercises and readiness evaluation	Preparedness and operational readiness	Universal core with specialist role pathway	Preparedness, readiness, learning	RP01-RP04, RP14	P4 Lead; P5 Govern and evaluate	PP03, PP05, PP12	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I03; I08; I20; I21; I22; I23; I25; I27; I29; I30; I31; I32	World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization. WHO benchmarks for strengthening health emergency capacities: support for the implementation of International Health Regulations and health emergency prevention, preparedness, response and resilience capacities [Internet]. Geneva: World Health Organization; 2023 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/b/72254 Eteng WEO. Collard E, Anebonam U, Magodi S, Kamara N, Guyasa M, Mankoula W. Designing a competency-based curriculum for an advanced training program in public health emergency management: a stepwise, mixed method approach, 2023. BMC Med Educ. 2024;24:1344. doi:10.1186/s12909-024-06341-x. Getaneh MW, Pascal A, Luka-Lawal RK, Kutubana MK, Bunting-Graden JA, Ezembro ETC, Tadicha SD, Essone PN, Magodi S, Anebonam U, Mankoula W, Oboma WE. The Africa Centres for Disease Control public health emergency management fellowship: insights from the inaugural cohort. Front Public Health. 2025;13:1444354. doi:10.3389/fpubh.2025.1444354. Olu O, Usman A, Kalambay K, Anyangwe S, Voyi K, Orach CG, Azazh A, Mapatano MA, Nsenga N, Manga L, Woldetsadik S, Nguessan F, Benson A. What should the African health workforce know about disasters? Proposed competencies for strengthening public health disaster risk management education in Africa. BMC Med Educ. 2018;18:60. doi:10.1186/s12909-018-1163-9. Hung KKC, MacDermot MK, Hui TSI, Chan SY, Mashino S, Mok CPY, Leung PH, Kayano R, Abrahams J, Wong CS, Chan EYY, Graham CA. Mapping study for health emergency and disaster risk management competencies and curricula: literature review and cross-sectional survey. Global Health. 2024;20:15. doi:10.1186/s12992-023-01010-y. European Centre for Disease Prevention and Control. Public health emergency preparedness: core competencies for European Union Member States [Internet]. Stockholm: ECDC; 2017 [cited 2026 Jul 19]. doi:10.2900/049462. Centers for Disease Control and Prevention. Public health emergency preparedness and response capabilities: national standards for state, local, tribal and territorial public health [Internet]. Atlanta (GA): CDC; 2018 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/readiness/php/phep-emergency-preparedness-and-response-capabilities/index.html Federal Emergency Management Agency. National Incident Management System. 3rd ed. [Internet]. Washington (DC): United States Department of Homeland Security; 2017 [cited 2026 Jul 19]. Available from: https://www.fema.gov/emergency
D09.6	Establish a multi-year exercise program, corrective-action governance and readiness indicators.	D09	Training, simulation, exercises and readiness evaluation	Preparedness and operational readiness	Universal core with specialist role pathway	Preparedness, readiness, learning	RP01-RP04, RP14	P4 Lead; P5 Govern and evaluate	PP03, PP05, PP12	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I03; I08; I20; I21; I22; I23; I25; I27; I29; I30; I31; I32	World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization. WHO benchmarks for strengthening health emergency capacities: support for the implementation of International Health Regulations and health emergency prevention, preparedness, response and resilience capacities [Internet]. Geneva: World Health Organization; 2023 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/b/72254 Eteng WEO. Collard E, Anebonam U, Magodi S, Kamara N, Guyasa M, Mankoula W. Designing a competency-based curriculum for an advanced training program in public health emergency management: a stepwise, mixed method approach, 2023. BMC Med Educ. 2024;24:1344. doi:10.1186/s12909-024-06341-x. Getaneh MW, Pascal A, Luka-Lawal RK, Kutubana MK, Bunting-Graden JA, Ezembro ETC, Tadicha SD, Essone PN, Magodi S, Anebonam U, Mankoula W, Oboma WE. The Africa Centres for Disease Control public health emergency management fellowship: insights from the inaugural cohort. Front Public Health. 2025;13:1444354. doi:10.3389/fpubh.2025.1444354. Olu O, Usman A, Kalambay K, Anyangwe S, Voyi K, Orach CG, Azazh A, Mapatano MA, Nsenga N, Manga L, Woldetsadik S, Nguessan F, Benson A. What should the African health workforce know about disasters? Proposed competencies for strengthening public health disaster risk management education in Africa. BMC Med Educ. 2018;18:60. doi:10.1186/s12909-018-1163-9. Hung KKC, MacDermot MK, Hui TSI, Chan SY, Mashino S, Mok CPY, Leung PH, Kayano R, Abrahams J, Wong CS, Chan EYY, Graham CA. Mapping study for health emergency and disaster risk management competencies and curricula: literature review and cross-sectional survey. Global Health. 2024;20:15. doi:10.1186/s12992-023-01010-y. European Centre for Disease Prevention and Control. Public health emergency preparedness: core competencies for European Union Member States [Internet]. Stockholm: ECDC; 2017 [cited 2026 Jul 19]. doi:10.2900/049462. Centers for Disease Control and Prevention. Public health emergency preparedness and response capabilities: national standards for state, local, tribal and territorial public health [Internet]. Atlanta (GA): CDC; 2018 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/readiness/php/phep-emergency-preparedness-and-response-capabilities/index.html Federal Emergency Management Agency. National Incident Management System. 3rd ed. [Internet]. Washington (DC): United States Department of Homeland Security; 2017 [cited 2026 Jul 19]. Available from: https://www.fema.gov/emergency

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D10.1	Define alert levels, notification pathways, decision authority and time standards.	D10	Alert, escalation, activation, scaling and deactivation	Incident management and emergency operations	Universal core with context-adaptable thresholds	Readiness, response, recovery	RP01-RP04, RP06, RP09	P3 Coordinate; P4 Lead	PP03, PP04, PP05, PP06, PP09, PP12	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I03; I09; I10; I11; I27; I29	World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Centers for Disease Control and Prevention. Public health emergency preparedness and response capabilities: national standards for state, local, tribal and territorial public health [Internet]. Atlanta (GA): CDC; 2018 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/readiness/php/phep-emergency-preparedness-and-response-capabilities/index.html Federal Emergency Management Agency. National Incident Management System. 3rd ed. [Internet]. Washington (DC): United States Department of Homeland Security; 2017 [cited 2026 Jul 19]. Available from: https://www.fema.gov/emergency-managers/nims
D10.2	Apply event grading, escalation and activation criteria using hazard, impact, uncertainty and capacity information.	D10	Alert, escalation, activation, scaling and deactivation	Incident management and emergency operations	Universal core with context-adaptable thresholds	Readiness, response, recovery	RP01-RP04, RP06, RP09	P3 Coordinate; P4 Lead	PP03, PP04, PP05, PP06, PP09, PP12	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I03; I09; I10; I11; I27; I29	World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Centers for Disease Control and Prevention. Public health emergency preparedness and response capabilities: national standards for state, local, tribal and territorial public health [Internet]. Atlanta (GA): CDC; 2018 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/readiness/php/phep-emergency-preparedness-and-response-capabilities/index.html Federal Emergency Management Agency. National Incident Management System. 3rd ed. [Internet]. Washington (DC): United States Department of Homeland Security; 2017 [cited 2026 Jul 19]. Available from: https://www.fema.gov/emergency-managers/nims

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D10.3	Choose an activation level and staffing model proportionate to the incident.	D10	Alert, escalation, activation, scaling and deactivation	Incident management and emergency operations	Universal core with context-adaptable thresholds	Readiness, response, recovery	RP01-RP04, RP06, RP09	P3 Coordinate; P4 Lead	PP03, PP04, PP05, PP06, PP09, PP12	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I03; I09; I10; I11; I27; I29	World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Centers for Disease Control and Prevention. Public health emergency preparedness and response capabilities: national standards for state, local, tribal and territorial public health [Internet]. Atlanta (GA): CDC; 2018 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/readiness/php/phep-emergency-preparedness-and-response-capabilities/index.html Federal Emergency Management Agency. National Incident Management System. 3rd ed. [Internet]. Washington (DC): United States Department of Homeland Security; 2017 [cited 2026 Jul 19]. Available from: https://www.fema.gov/emergency-managers/nims
D10.4	Document activation decisions, assumptions, objectives, roles and notifications.	D10	Alert, escalation, activation, scaling and deactivation	Incident management and emergency operations	Universal core with context-adaptable thresholds	Readiness, response, recovery	RP01-RP04, RP06, RP09	P3 Coordinate; P4 Lead	PP03, PP04, PP05, PP06, PP09, PP12	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I03; I09; I10; I11; I27; I29	World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Centers for Disease Control and Prevention. Public health emergency preparedness and response capabilities: national standards for state, local, tribal and territorial public health [Internet]. Atlanta (GA): CDC; 2018 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/readiness/php/phep-emergency-preparedness-and-response-capabilities/index.html Federal Emergency Management Agency. National Incident Management System. 3rd ed. [Internet]. Washington (DC): United States Department of Homeland Security; 2017 [cited 2026 Jul 19]. Available from: https://www.fema.gov/emergency-managers/nims

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D10.5	Reassess scale and adapt activation as the situation, workload and partner arrangements change.	D10	Alert, escalation, activation, scaling and deactivation	Incident management and emergency operations	Universal core with context-adaptable thresholds	Readiness, response, recovery	RP01-RP04, RP06, RP09	P3 Coordinate; P4 Lead	PP03, PP04, PP05, PP06, PP09, PP12	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I03; I09; I10; I11; I27; I29	World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Centers for Disease Control and Prevention. Public health emergency preparedness and response capabilities: national standards for state, local, tribal and territorial public health [Internet]. Atlanta (GA): CDC; 2018 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/readiness/php/phep-emergency-preparedness-and-response-capabilities/index.html Federal Emergency Management Agency. National Incident Management System. 3rd ed. [Internet]. Washington (DC): United States Department of Homeland Security; 2017 [cited 2026 Jul 19]. Available from: https://www.fema.gov/emergency-managers/nims
D10.6	Apply deactivation and transition criteria and transfer residual actions into routine programs or recovery structures.	D10	Alert, escalation, activation, scaling and deactivation	Incident management and emergency operations	Universal core with context-adaptable thresholds	Readiness, response, recovery	RP01-RP04, RP06, RP09	P3 Coordinate; P4 Lead	PP03, PP04, PP05, PP06, PP09, PP12	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I03; I09; I10; I11; I27; I29	World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Centers for Disease Control and Prevention. Public health emergency preparedness and response capabilities: national standards for state, local, tribal and territorial public health [Internet]. Atlanta (GA): CDC; 2018 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/readiness/php/phep-emergency-preparedness-and-response-capabilities/index.html Federal Emergency Management Agency. National Incident Management System. 3rd ed. [Internet]. Washington (DC): United States Department of Homeland Security; 2017 [cited 2026 Jul 19]. Available from: https://www.fema.gov/emergency-managers/nims

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D11.1	Explain incident-management principles, functions, terminology and relationship to national coordination systems.	D11	Incident management systems, command and coordination	Incident management and emergency operations	Universal core with role-pathway depth	Response, recovery	RP01-RP08, RP11-RP14, RP16	P3 Coordinate; P4 Lead; P5 Govern for system design	PP04, PP05, PP06, PP07, PP09	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I03; I09; I10; I11; I13; I25; I27; I29; I30; A27; I45	World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. 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D11.2	Build a scalable organization with command or management, operations, planning, logistics and finance/administration functions.	D11	Incident management systems, command and coordination	Incident management and emergency operations	Universal core with role-pathway depth	Response, recovery	RP01-RP08, RP11-RP14, RP16	P3 Coordinate; P4 Lead; P5 Govern for system design	PP04, PP05, PP06, PP07, PP09	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I03; I09; I10; I11; I13; I25; I27; I29; I30; A27; I45	World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Rose DA, Murthy S, Brooks J, Bryant J. The evolution of public health emergency management as a field of practice. Am J Public Health. 2017;107(S2):S126-S133. doi:10.2105/AJPH.2017.303947. European Centre for Disease Prevention and Control. Public health emergency preparedness: core competencies for European Union Member States [Internet]. Stockholm: ECDC; 2017 [cited 2026 Jul 19]. doi:10.2900/049462. Centers for Disease Control and Prevention. Public health emergency preparedness and response capabilities: national standards for state, local, tribal and territorial public health [Internet]. Atlanta (GA): CDC; 2018 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/readiness/php/phep-emergency-preparedness-and-response-capabilities/index.html Federal Emergency Management Agency. National Incident Management System. 3rd ed. [Internet]. Washington (DC): United States Department of Homeland Security; 2017 [cited 2026 Jul 19]. Available from: https://www.fema.gov/emergency-managers/nims Federal Emergency Management Agency. Homeland Security Exercise and Evaluation Program doctrine [Internet]. Washington (DC): United States Department of Homeland Security; 2020 [cited 2026 Jul 19]. Available from: https://preptoolkit.fema.gov/web/hseep-resources Centers for Disease Control and Prevention. Emergency management and global health security [Internet]. Atlanta (GA): Centers for Disease Control and Prevention; 2024 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/orr/deo/emergency-management.html World Health Organization Regional Office for Africa. Handbook for public health emergency operations center operations and management [Internet].

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D11.3	Assign authority, deputies, liaisons, safety and public-information roles and maintain span of control.	D11	Incident management systems, command and coordination	Incident management and emergency operations	Universal core with role-pathway depth	Response, recovery	RP01-RP08, RP11-RP14, RP16	P3 Coordinate; P4 Lead; P5 Govern for system design	PP04, PP05, PP06, PP07, PP09	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I03; I09; I10; I11; I13; I25; I27; I29; I30; A27; I45	World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. 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D11.4	Use unified or coordinated command when multiple mandates, jurisdictions or sectors share responsibility.	D11	Incident management systems, command and coordination	Incident management and emergency operations	Universal core with role-pathway depth	Response, recovery	RP01-RP08, RP11-RP14, RP16	P3 Coordinate; P4 Lead; P5 Govern for system design	PP04, PP05, PP06, PP07, PP09	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I03; I09; I10; I11; I13; I25; I27; I29; I30; A27; I45	World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Rose DA, Murthy S, Brooks J, Bryant J. The evolution of public health emergency management as a field of practice. Am J Public Health. 2017;107(S2):S126-S133. doi:10.2105/AJPH.2017.303947. European Centre for Disease Prevention and Control. Public health emergency preparedness: core competencies for European Union Member States [Internet]. Stockholm: ECDC; 2017 [cited 2026 Jul 19]. doi:10.2900/049462. Centers for Disease Control and Prevention. Public health emergency preparedness and response capabilities: national standards for state, local, tribal and territorial public health [Internet]. Atlanta (GA): CDC; 2018 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/readiness/php/phep-emergency-preparedness-and-response-capabilities/index.html Federal Emergency Management Agency. National Incident Management System. 3rd ed. [Internet]. Washington (DC): United States Department of Homeland Security; 2017 [cited 2026 Jul 19]. Available from: https://www.fema.gov/emergency-managers/nims Federal Emergency Management Agency. Homeland Security Exercise and Evaluation Program doctrine [Internet]. Washington (DC): United States Department of Homeland Security; 2020 [cited 2026 Jul 19]. Available from: https://preptoolkit.fema.gov/web/hseep-resources Centers for Disease Control and Prevention. Emergency management and global health security [Internet]. Atlanta (GA): Centers for Disease Control and Prevention; 2024 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/orr/deo/emergency-management.html World Health Organization Regional Office for Africa. Handbook for public health emergency operations center operations and management [Internet].

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D11.5	Manage objectives, operational periods, meeting rhythm, delegation, issue escalation and accountability.	D11	Incident management systems, command and coordination	Incident management and emergency operations	Universal core with role-pathway depth	Response, recovery	RP01-RP08, RP11-RP14, RP16	P3 Coordinate; P4 Lead; P5 Govern for system design	PP04, PP05, PP06, PP07, PP09	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I03; I09; I10; I11; I13; I25; I27; I29; I30; A27; I45	World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. 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D11.6	Evaluate incident-management performance and correct role confusion, duplication, bottlenecks or unsafe practices.	D11	Incident management systems, command and coordination	Incident management and emergency operations	Universal core with role-pathway depth	Response, recovery	RP01-RP08, RP11-RP14, RP16	P3 Coordinate; P4 Lead; P5 Govern for system design	PP04, PP05, PP06, PP07, PP09	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I03; I09; I10; I11; I13; I25; I27; I29; I30; A27; I45	World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Rose DA, Murthy S, Brooks J, Bryant J. The evolution of public health emergency management as a field of practice. Am J Public Health. 2017;107(S2):S126-S133. doi:10.2105/AJPH.2017.303947. European Centre for Disease Prevention and Control. Public health emergency preparedness: core competencies for European Union Member States [Internet]. Stockholm: ECDC; 2017 [cited 2026 Jul 19]. doi:10.2900/049462. Centers for Disease Control and Prevention. Public health emergency preparedness and response capabilities: national standards for state, local, tribal and territorial public health [Internet]. Atlanta (GA): CDC; 2018 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/readiness/php/phep-emergency-preparedness-and-response-capabilities/index.html Federal Emergency Management Agency. National Incident Management System. 3rd ed. [Internet]. Washington (DC): United States Department of Homeland Security; 2017 [cited 2026 Jul 19]. Available from: https://www.fema.gov/emergency-managers/nims Federal Emergency Management Agency. Homeland Security Exercise and Evaluation Program doctrine [Internet]. Washington (DC): United States Department of Homeland Security; 2020 [cited 2026 Jul 19]. Available from: https://preptoolkit.fema.gov/web/hseep-resources Centers for Disease Control and Prevention. Emergency management and global health security [Internet]. Atlanta (GA): Centers for Disease Control and Prevention; 2024 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/orr/deo/emergency-management.html World Health Organization Regional Office for Africa. Handbook for public health emergency operations center operations and management [Internet].

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D12.1	Define the center mandate, objectives, governance, concept of operations and relationship to other emergency operations centers.	D12	Public health emergency operations center establishment, management and continuity	Incident management and emergency operations	Universal core with role-pathway depth	Preparedness, readiness, response, recovery	RP01-RP04, RP06-RP09, RP14	P4 Lead; P5 Govern and evaluate	PP03, PP04, PP05, PP06, PP09, PP10	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I03; I09; I10; I11; I25; A27; I45	World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 European Centre for Disease Prevention and Control. Public health emergency preparedness: core competencies for European Union Member States [Internet]. Stockholm: ECDC; 2017 [cited 2026 Jul 19]. doi:10.2900/049462. Centers for Disease Control and Prevention. Emergency management and global health security [Internet]. Atlanta (GA): Centers for Disease Control and Prevention; 2024 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/orr/deo/emergency-management.html World Health Organization Regional Office for Africa. Handbook for public health emergency operations center operations and management [Internet]. Brazzaville: WHO Regional Office for Africa; 2021 [cited 2026 Jul 19]. Available from: https://www.afro.who.int/sites/default/files/2021-03/AFRO_PHEOC-Handbook_.pdf
D12.2	Specify physical or virtual infrastructure, survivability, accessibility, security and alternate-site requirements.	D12	Public health emergency operations center establishment, management and continuity	Incident management and emergency operations	Universal core with role-pathway depth	Preparedness, readiness, response, recovery	RP01-RP04, RP06-RP09, RP14	P4 Lead; P5 Govern and evaluate	PP03, PP04, PP05, PP06, PP09, PP10	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I03; I09; I10; I11; I25; A27; I45	World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 European Centre for Disease Prevention and Control. Public health emergency preparedness: core competencies for European Union Member States [Internet]. Stockholm: ECDC; 2017 [cited 2026 Jul 19]. doi:10.2900/049462. Centers for Disease Control and Prevention. Emergency management and global health security [Internet]. Atlanta (GA): Centers for Disease Control and Prevention; 2024 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/orr/deo/emergency-management.html World Health Organization Regional Office for Africa. Handbook for public health emergency operations center operations and management [Internet]. Brazzaville: WHO Regional Office for Africa; 2021 [cited 2026 Jul 19]. Available from: https://www.afro.who.int/sites/default/files/2021-03/AFRO_PHEOC-Handbook_.pdf

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D12.3	Design information and communication technology, information systems, minimum datasets and interoperability arrangements.	D12	Public health emergency operations center establishment, management and continuity	Incident management and emergency operations	Universal core with role-pathway depth	Preparedness, readiness, response, recovery	RP01-RP04, RP06-RP09, RP14	P4 Lead; P5 Govern and evaluate	PP03, PP04, PP05, PP06, PP09, PP10	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I03; I09; I10; I11; I25; A27; I45	World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 European Centre for Disease Prevention and Control. Public health emergency preparedness: core competencies for European Union Member States [Internet]. Stockholm: ECDC; 2017 [cited 2026 Jul 19]. doi:10.2900/049462. Centers for Disease Control and Prevention. Emergency management and global health security [Internet]. Atlanta (GA): Centers for Disease Control and Prevention; 2024 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/orri/deo/emergency-management.html World Health Organization Regional Office for Africa. Handbook for public health emergency operations center operations and management [Internet]. Brazzaville: WHO Regional Office for Africa; 2021 [cited 2026 Jul 19]. Available from: https://www.afro.who.int/sites/default/files/2021-03/AFRO_PHEOC-Handbook_.pdf
D12.4	Develop standard operating procedures, staffing plans, rosters, position aids and activation checklists.	D12	Public health emergency operations center establishment, management and continuity	Incident management and emergency operations	Universal core with role-pathway depth	Preparedness, readiness, response, recovery	RP01-RP04, RP06-RP09, RP14	P4 Lead; P5 Govern and evaluate	PP03, PP04, PP05, PP06, PP09, PP10	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I03; I09; I10; I11; I25; A27; I45	World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 European Centre for Disease Prevention and Control. Public health emergency preparedness: core competencies for European Union Member States [Internet]. Stockholm: ECDC; 2017 [cited 2026 Jul 19]. doi:10.2900/049462. Centers for Disease Control and Prevention. Emergency management and global health security [Internet]. Atlanta (GA): Centers for Disease Control and Prevention; 2024 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/orri/deo/emergency-management.html World Health Organization Regional Office for Africa. Handbook for public health emergency operations center operations and management [Internet]. Brazzaville: WHO Regional Office for Africa; 2021 [cited 2026 Jul 19]. Available from: https://www.afro.who.int/sites/default/files/2021-03/AFRO_PHEOC-Handbook_.pdf

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D12.5	Manage operational rhythm, briefings, displays, decisions, records, partner access and round-the-clock continuity.	D12	Public health emergency operations center establishment, management and continuity	Incident management and emergency operations	Universal core with role-pathway depth	Preparedness, readiness, response, recovery	RP01-RP04, RP06-RP09, RP14	P4 Lead; P5 Govern and evaluate	PP03, PP04, PP05, PP06, PP09, PP10	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I03; I09; I10; I11; I25; A27; I45	World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 European Centre for Disease Prevention and Control. Public health emergency preparedness: core competencies for European Union Member States [Internet]. Stockholm: ECDC; 2017 [cited 2026 Jul 19]. doi:10.2900/049462. Centers for Disease Control and Prevention. Emergency management and global health security [Internet]. Atlanta (GA): Centers for Disease Control and Prevention; 2024 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/orr/deo/emergency-management.html World Health Organization Regional Office for Africa. Handbook for public health emergency operations center operations and management [Internet]. Brazzaville: WHO Regional Office for Africa; 2021 [cited 2026 Jul 19]. Available from: https://www.afro.who.int/sites/default/files/2021-03/AFRO_PHEOC-Handbook_.pdf
D12.6	Evaluate performance, cost, sustainability, continuity and corrective-action implementation.	D12	Public health emergency operations center establishment, management and continuity	Incident management and emergency operations	Universal core with role-pathway depth	Preparedness, readiness, response, recovery	RP01-RP04, RP06-RP09, RP14	P4 Lead; P5 Govern and evaluate	PP03, PP04, PP05, PP06, PP09, PP10	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I03; I09; I10; I11; I25; A27; I45	World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 European Centre for Disease Prevention and Control. Public health emergency preparedness: core competencies for European Union Member States [Internet]. Stockholm: ECDC; 2017 [cited 2026 Jul 19]. doi:10.2900/049462. Centers for Disease Control and Prevention. Emergency management and global health security [Internet]. Atlanta (GA): Centers for Disease Control and Prevention; 2024 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/orr/deo/emergency-management.html World Health Organization Regional Office for Africa. Handbook for public health emergency operations center operations and management [Internet]. Brazzaville: WHO Regional Office for Africa; 2021 [cited 2026 Jul 19]. Available from: https://www.afro.who.int/sites/default/files/2021-03/AFRO_PHEOC-Handbook_.pdf

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D13.1	Frame the operational problem using current impacts, risks, response status, resource constraints and uncertainty.	D13	Operational planning, objectives and decision-making under uncertainty	Incident management and emergency operations	Universal core with role-pathway depth	Response, recovery	RP02-RP06, RP09, RP11	P3 Coordinate; P4 Lead	PP04, PP05, PP06, PP07, PP09, PP10, PP11	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I03; I09; I10; I11; I13; I27; I29; I30; A27	World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Rose DA, Murthy S, Brooks J, Bryant J. The evolution of public health emergency management as a field of practice. Am J Public Health. 2017;107(S2):S126-S133. doi:10.2105/AJPH.2017.303947. Centers for Disease Control and Prevention. Public health emergency preparedness and response capabilities: national standards for state, local, tribal and territorial public health [Internet]. Atlanta (GA): CDC; 2018 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/readiness/php/phep-emergency-preparedness-and-response-capabilities/index.html Federal Emergency Management Agency. National Incident Management System. 3rd ed. [Internet]. Washington (DC): United States Department of Homeland Security; 2017 [cited 2026 Jul 19]. Available from: https://www.fema.gov/emergency-managers/nims Federal Emergency Management Agency. Homeland Security Exercise and Evaluation Program doctrine [Internet]. Washington (DC): United States Department of Homeland Security; 2020 [cited 2026 Jul 19]. Available from: https://preptoolkit.fema.gov/web/hseep-resources Centers for Disease Control and Prevention. Emergency management and global health security [Internet]. Atlanta (GA): Centers for Disease Control and Prevention; 2024 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/orri/deo/emergency-management.html
D13.2	Write specific, measurable, achievable, relevant and time-bound incident objectives.	D13	Operational planning, objectives and decision-making under uncertainty	Incident management and emergency operations	Universal core with role-pathway depth	Response, recovery	RP02-RP06, RP09, RP11	P3 Coordinate; P4 Lead	PP04, PP05, PP06, PP07, PP09, PP10, PP11	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I03; I09; I10; I11; I13; I27; I29; I30; A27	World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Rose DA, Murthy S, Brooks J, Bryant J. The evolution of public health emergency management as a field of practice. Am J Public Health. 2017;107(S2):S126-S133. doi:10.2105/AJPH.2017.303947. Centers for Disease Control and Prevention. Public health emergency preparedness and response capabilities: national standards for state, local, tribal and territorial public health [Internet]. Atlanta (GA): CDC; 2018 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/readiness/php/phep-emergency-preparedness-and-response-capabilities/index.html Federal Emergency Management Agency. National Incident Management System. 3rd ed. [Internet]. Washington (DC): United States Department of Homeland Security; 2017 [cited 2026 Jul 19]. Available from: https://www.fema.gov/emergency-managers/nims Federal Emergency Management Agency. Homeland Security Exercise and Evaluation Program doctrine [Internet]. Washington (DC): United States Department of Homeland Security; 2020 [cited 2026 Jul 19]. Available from: https://preptoolkit.fema.gov/web/hseep-resources Centers for Disease Control and Prevention. Emergency management and global health security [Internet]. Atlanta (GA): Centers for Disease Control and Prevention; 2024 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/orri/deo/emergency-management.html

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D13.3	Compare strategies and tactics using effectiveness, feasibility, legality, ethics, equity, resources and unintended effects.	D13	Operational planning, objectives and decision-making under uncertainty	Incident management and emergency operations	Universal core with role-pathway depth	Response, recovery	RP02-RP06, RP09, RP11	P3 Coordinate; P4 Lead	PP04, PP05, PP06, PP07, PP09, PP10, PP11	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I03; I09; I10; I11; I13; I27; I29; I30; A27	World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Rose DA, Murthy S, Brooks J, Bryant J. The evolution of public health emergency management as a field of practice. Am J Public Health. 2017;107(S2):S126-S133. doi:10.2105/AJPH.2017.303947. Centers for Disease Control and Prevention. Public health emergency preparedness and response capabilities: national standards for state, local, tribal and territorial public health [Internet]. Atlanta (GA): CDC; 2018 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/readiness/php/phep-emergency-preparedness-and-response-capabilities/index.html Federal Emergency Management Agency. National Incident Management System. 3rd ed. [Internet]. Washington (DC): United States Department of Homeland Security; 2017 [cited 2026 Jul 19]. Available from: https://www.fema.gov/emergency-managers/nims Federal Emergency Management Agency. Homeland Security Exercise and Evaluation Program doctrine [Internet]. Washington (DC): United States Department of Homeland Security; 2020 [cited 2026 Jul 19]. Available from: https://preptoolkit.fema.gov/web/hseep-resources Centers for Disease Control and Prevention. Emergency management and global health security [Internet]. Atlanta (GA): Centers for Disease Control and Prevention; 2024 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/orri/deo/emergency-management.html
D13.4	Develop an incident action plan that assigns tasks, resources, safety measures, communication and reporting.	D13	Operational planning, objectives and decision-making under uncertainty	Incident management and emergency operations	Universal core with role-pathway depth	Response, recovery	RP02-RP06, RP09, RP11	P3 Coordinate; P4 Lead	PP04, PP05, PP06, PP07, PP09, PP10, PP11	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I03; I09; I10; I11; I13; I27; I29; I30; A27	World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Rose DA, Murthy S, Brooks J, Bryant J. The evolution of public health emergency management as a field of practice. Am J Public Health. 2017;107(S2):S126-S133. doi:10.2105/AJPH.2017.303947. Centers for Disease Control and Prevention. Public health emergency preparedness and response capabilities: national standards for state, local, tribal and territorial public health [Internet]. Atlanta (GA): CDC; 2018 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/readiness/php/phep-emergency-preparedness-and-response-capabilities/index.html Federal Emergency Management Agency. National Incident Management System. 3rd ed. [Internet]. Washington (DC): United States Department of Homeland Security; 2017 [cited 2026 Jul 19]. Available from: https://www.fema.gov/emergency-managers/nims Federal Emergency Management Agency. Homeland Security Exercise and Evaluation Program doctrine [Internet]. Washington (DC): United States Department of Homeland Security; 2020 [cited 2026 Jul 19]. Available from: https://preptoolkit.fema.gov/web/hseep-resources Centers for Disease Control and Prevention. Emergency management and global health security [Internet]. Atlanta (GA): Centers for Disease Control and Prevention; 2024 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/orri/deo/emergency-management.html

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D13.5	Run planning and coordination meetings and maintain decision, issue and action logs.	D13	Operational planning, objectives and decision-making under uncertainty	Incident management and emergency operations	Universal core with role-pathway depth	Response, recovery	RP02-RP06, RP09, RP11	P3 Coordinate; P4 Lead	PP04, PP05, PP06, PP07, PP09, PP10, PP11	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I03; I09; I10; I11; I13; I27; I29; I30; A27	World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Rose DA, Murthy S, Brooks J, Bryant J. The evolution of public health emergency management as a field of practice. Am J Public Health. 2017;107(S2):S126-S133. doi:10.2105/AJPH.2017.303947. Centers for Disease Control and Prevention. Public health emergency preparedness and response capabilities: national standards for state, local, tribal and territorial public health [Internet]. Atlanta (GA): CDC; 2018 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/readiness/php/phep-emergency-preparedness-and-response-capabilities/index.html Federal Emergency Management Agency. National Incident Management System. 3rd ed. [Internet]. Washington (DC): United States Department of Homeland Security; 2017 [cited 2026 Jul 19]. Available from: https://www.fema.gov/emergency-managers/nims Federal Emergency Management Agency. Homeland Security Exercise and Evaluation Program doctrine [Internet]. Washington (DC): United States Department of Homeland Security; 2020 [cited 2026 Jul 19]. Available from: https://preptoolkit.fema.gov/web/hseep-resources Centers for Disease Control and Prevention. Emergency management and global health security [Internet]. Atlanta (GA): Centers for Disease Control and Prevention; 2024 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/orri/deo/emergency-management.html
D13.6	Monitor objective attainment and adapt plans across operational periods.	D13	Operational planning, objectives and decision-making under uncertainty	Incident management and emergency operations	Universal core with role-pathway depth	Response, recovery	RP02-RP06, RP09, RP11	P3 Coordinate; P4 Lead	PP04, PP05, PP06, PP07, PP09, PP10, PP11	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I03; I09; I10; I11; I13; I27; I29; I30; A27	World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Rose DA, Murthy S, Brooks J, Bryant J. The evolution of public health emergency management as a field of practice. Am J Public Health. 2017;107(S2):S126-S133. doi:10.2105/AJPH.2017.303947. Centers for Disease Control and Prevention. Public health emergency preparedness and response capabilities: national standards for state, local, tribal and territorial public health [Internet]. Atlanta (GA): CDC; 2018 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/readiness/php/phep-emergency-preparedness-and-response-capabilities/index.html Federal Emergency Management Agency. National Incident Management System. 3rd ed. [Internet]. Washington (DC): United States Department of Homeland Security; 2017 [cited 2026 Jul 19]. Available from: https://www.fema.gov/emergency-managers/nims Federal Emergency Management Agency. Homeland Security Exercise and Evaluation Program doctrine [Internet]. Washington (DC): United States Department of Homeland Security; 2020 [cited 2026 Jul 19]. Available from: https://preptoolkit.fema.gov/web/hseep-resources Centers for Disease Control and Prevention. Emergency management and global health security [Internet]. Atlanta (GA): Centers for Disease Control and Prevention; 2024 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/orri/deo/emergency-management.html

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D14.1	Define critical information requirements, reporting lines, frequency, formats and responsibilities.	D14	Information, knowledge and records management	Incident management and emergency operations	Universal core with information role pathway	Preparedness, response, recovery, learning	RP02-RP06, RP08-RP10, RP14	P3 Coordinate; P4 Lead; P5 Govern for information systems	PP04, PP05, PP06, PP08, PP09, PP10	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I03; I09; I10; I11; I36; I37; I43	World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 World Health Organization. Public health intelligence competency framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240115408. Available from: https://www.who.int/publications/i/item/9789240115408 World Health Organization. Public health intelligence curriculum [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240115385. Available from: https://www.who.int/publications/i/item/9789240115385 World Health Organization, Food and Agriculture Organization of the United Nations, World Organisation for Animal Health. Guidance for One Health field epidemiology curriculum development [Internet]. Geneva: World Health Organization; 2023 [cited 2026 Jul 19]. ISBN: 9789240083875. doi:10.20506/cohfe.3433.
D14.2	Design information flows that connect field teams, laboratories, facilities, communities, partners and decision-makers.	D14	Information, knowledge and records management	Incident management and emergency operations	Universal core with information role pathway	Preparedness, response, recovery, learning	RP02-RP06, RP08-RP10, RP14	P3 Coordinate; P4 Lead; P5 Govern for information systems	PP04, PP05, PP06, PP08, PP09, PP10	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I03; I09; I10; I11; I36; I37; I43	World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 World Health Organization. Public health intelligence competency framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240115408. Available from: https://www.who.int/publications/i/item/9789240115408 World Health Organization. Public health intelligence curriculum [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240115385. Available from: https://www.who.int/publications/i/item/9789240115385 World Health Organization, Food and Agriculture Organization of the United Nations, World Organisation for Animal Health. Guidance for One Health field epidemiology curriculum development [Internet]. Geneva: World Health Organization; 2023 [cited 2026 Jul 19]. ISBN: 9789240083875. doi:10.20506/cohfe.3433.

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D14.3	Maintain a common operating picture and produce accurate, timely and audience-specific situation reports and briefings.	D14	Information, knowledge and records management	Incident management and emergency operations	Universal core with information role pathway	Preparedness, response, recovery, learning	RP02-RP06, RP08-RP10, RP14	P3 Coordinate; P4 Lead; P5 Govern for information systems	PP04, PP05, PP06, PP08, PP09, PP10	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I03; I09; I10; I11; I36; I37; I43	World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 World Health Organization. Public health intelligence competency framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240115408. Available from: https://www.who.int/publications/i/item/9789240115408 World Health Organization. Public health intelligence curriculum [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240115385. Available from: https://www.who.int/publications/i/item/9789240115385 World Health Organization, Food and Agriculture Organization of the United Nations, World Organisation for Animal Health. Guidance for One Health field epidemiology curriculum development [Internet]. Geneva: World Health Organization; 2023 [cited 2026 Jul 19]. ISBN: 9789240083875. doi:10.20506/cohfe.3433.
D14.4	Apply data standards, version control, document control, confidentiality, access and retention requirements.	D14	Information, knowledge and records management	Incident management and emergency operations	Universal core with information role pathway	Preparedness, response, recovery, learning	RP02-RP06, RP08-RP10, RP14	P3 Coordinate; P4 Lead; P5 Govern for information systems	PP04, PP05, PP06, PP08, PP09, PP10	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I03; I09; I10; I11; I36; I37; I43	World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 World Health Organization. Public health intelligence competency framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240115408. Available from: https://www.who.int/publications/i/item/9789240115408 World Health Organization. Public health intelligence curriculum [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240115385. Available from: https://www.who.int/publications/i/item/9789240115385 World Health Organization, Food and Agriculture Organization of the United Nations, World Organisation for Animal Health. Guidance for One Health field epidemiology curriculum development [Internet]. Geneva: World Health Organization; 2023 [cited 2026 Jul 19]. ISBN: 9789240083875. doi:10.20506/cohfe.3433.

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D14.5	Manage handover, archiving, lessons, contact lists, maps, decisions and supporting evidence.	D14	Information, knowledge and records management	Incident management and emergency operations	Universal core with information role pathway	Preparedness, response, recovery, learning	RP02-RP06, RP08-RP10, RP14	P3 Coordinate; P4 Lead; P5 Govern for information systems	PP04, PP05, PP06, PP08, PP09, PP10	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I03; I09; I10; I11; I36; I37; I43	World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 World Health Organization. Public health intelligence competency framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240115408. Available from: https://www.who.int/publications/i/item/9789240115408 World Health Organization. Public health intelligence curriculum [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240115385. Available from: https://www.who.int/publications/i/item/9789240115385 World Health Organization, Food and Agriculture Organization of the United Nations, World Organisation for Animal Health. Guidance for One Health field epidemiology curriculum development [Internet]. Geneva: World Health Organization; 2023 [cited 2026 Jul 19]. ISBN: 9789240083875. doi:10.20506/cohfe.3433.
D14.6	Evaluate information timeliness, quality, burden, use and security and improve the system.	D14	Information, knowledge and records management	Incident management and emergency operations	Universal core with information role pathway	Preparedness, response, recovery, learning	RP02-RP06, RP08-RP10, RP14	P3 Coordinate; P4 Lead; P5 Govern for information systems	PP04, PP05, PP06, PP08, PP09, PP10	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I03; I09; I10; I11; I36; I37; I43	World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 World Health Organization. Public health intelligence competency framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240115408. Available from: https://www.who.int/publications/i/item/9789240115408 World Health Organization. Public health intelligence curriculum [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240115385. Available from: https://www.who.int/publications/i/item/9789240115385 World Health Organization, Food and Agriculture Organization of the United Nations, World Organisation for Animal Health. Guidance for One Health field epidemiology curriculum development [Internet]. Geneva: World Health Organization; 2023 [cited 2026 Jul 19]. ISBN: 9789240083875. doi:10.20506/cohfe.3433.

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D15.1	Forecast resource requirements from objectives, scenarios, consumption rates, lead times and uncertainty.	D15	Logistics, supply chain, finance, administration and resource management	Incident management and emergency operations	Universal core with specialist role pathway	Preparedness, response, recovery	RP02-RP08, RP11-RP13, RP16	P3 Coordinate; P4 Lead; P5 Govern for systems	PP03, PP04, PP05, PP06, PP07, PP09, PP11	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I03; I07; I08; I09; I10; I11; I27; I29; I30; I46; I45	World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization. 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D15.2	Develop procurement, stockpile, warehousing, cold-chain, transport, distribution and reverse-logistics arrangements.	D15	Logistics, supply chain, finance, administration and resource management	Incident management and emergency operations	Universal core with specialist role pathway	Preparedness, response, recovery	RP02-RP08, RP11-RP13, RP16	P3 Coordinate; P4 Lead; P5 Govern for systems	PP03, PP04, PP05, PP06, PP07, PP09, PP11	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I03; I07; I08; I09; I10; I11; I27; I29; I30; I46; I45	World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization. Joint external evaluation tool: International Health Regulations (2005), third edition [Internet]. Geneva: World Health Organization; 2022 [cited 2026 Jul 19]. ISBN: 9789240051980. Available from: https://www.who.int/publications/i/item/9789240051980 World Health Organization. WHO benchmarks for strengthening health emergency capacities: support for the implementation of International Health Regulations and health emergency prevention, preparedness, response and resilience capacities [Internet]. Geneva: World Health Organization; 2023 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/b/72254 World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Centers for Disease Control and Prevention. Public health emergency preparedness and response capabilities: national standards for state, local, tribal and territorial public health [Internet]. Atlanta (GA): CDC; 2018 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/readiness/php/phep-emergency-preparedness-and-response-capabilities/index.html Federal Emergency Management Agency. National Incident Management System. 3rd ed. [Internet]. Washington (DC): United States Department of Homeland Security; 2017 [cited 2026 Jul 19]. Available from: https://www.fema.gov/emergency-managers/nims Federal Emergency Management Agency. Homeland Security Exercise and Evaluation Program doctrine [Internet]. Washington (DC): United States Department of Homeland Security; 2020 [cited 2026 Jul 19]. Available from: https://preptoolkit.fema.gov/web/hseep-resources Sasie SD, Ayano G, Girma M, Van Zuylen P, Aragaw FM, Darebo TD, Guerrero-Torres L, Mulugeta A, Spiot M. Development and validation of an assessment tool

outcome_c ode	outcome_statement	domain_c ode	domain_title	cluster	curriculum_layer	emergency_phases	role_pathways	terminal_proficiency	required_prod ucts	assessment_context	source_anchor_ids	source_anchor_citations
D15.3	Operate resource-request, allocation, prioritization and tracking systems across partners and levels.	D15	Logistics, supply chain, finance, administration and resource management	Incident management and emergency operations	Universal core with specialist role pathway	Preparedness, response, recovery	RP02-RP08, RP11-RP13, RP16	P3 Coordinate; P4 Lead; P5 Govern for systems	PP03, PP04, PP05, PP06, PP07, PP09, PP11	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I03; I07; I08; I09; I10; I11; I27; I29; I30; I46; I45	World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization. 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D15.4	Manage facilities, communications, accommodation, feeding, fleet, maintenance and staff support.	D15	Logistics, supply chain, finance, administration and resource management	Incident management and emergency operations	Universal core with specialist role pathway	Preparedness, response, recovery	RP02-RP08, RP11-RP13, RP16	P3 Coordinate; P4 Lead; P5 Govern for systems	PP03, PP04, PP05, PP06, PP07, PP09, PP11	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I03; I07; I08; I09; I10; I11; I27; I29; I30; I46; I45	World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization. Joint external evaluation tool: International Health Regulations (2005), third edition [Internet]. Geneva: World Health Organization; 2022 [cited 2026 Jul 19]. ISBN: 9789240051980. Available from: https://www.who.int/publications/i/item/9789240051980 World Health Organization. WHO benchmarks for strengthening health emergency capacities: support for the implementation of International Health Regulations and health emergency prevention, preparedness, response and resilience capacities [Internet]. Geneva: World Health Organization; 2023 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/b/72254 World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Centers for Disease Control and Prevention. Public health emergency preparedness and response capabilities: national standards for state, local, tribal and territorial public health [Internet]. Atlanta (GA): CDC; 2018 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/readiness/php/phep-emergency-preparedness-and-response-capabilities/index.html Federal Emergency Management Agency. National Incident Management System. 3rd ed. [Internet]. Washington (DC): United States Department of Homeland Security; 2017 [cited 2026 Jul 19]. Available from: https://www.fema.gov/emergency-managers/nims Federal Emergency Management Agency. Homeland Security Exercise and Evaluation Program doctrine [Internet]. Washington (DC): United States Department of Homeland Security; 2020 [cited 2026 Jul 19]. Available from: https://preptoolkit.fema.gov/web/hseep-resources Sasie SD, Ayano G, Girma M, Van Zuylen P, Aragaw FM, Darebo TD, Guerrero-Torres L, Mulugeta A, Spiot M. Development and validation of an assessment tool

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D15.5	Maintain time, cost, contract, claims, reimbursement, donation and financial-control records.	D15	Logistics, supply chain, finance, administration and resource management	Incident management and emergency operations	Universal core with specialist role pathway	Preparedness, response, recovery	RP02-RP08, RP11-RP13, RP16	P3 Coordinate; P4 Lead; P5 Govern for systems	PP03, PP04, PP05, PP06, PP07, PP09, PP11	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I03; I07; I08; I09; I10; I11; I27; I29; I30; I46; I45	World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization. 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D15.6	Plan demobilization, disposal, reconciliation, replenishment and post-event financial review.	D15	Logistics, supply chain, finance, administration and resource management	Incident management and emergency operations	Universal core with specialist role pathway	Preparedness, response, recovery	RP02-RP08, RP11-RP13, RP16	P3 Coordinate; P4 Lead; P5 Govern for systems	PP03, PP04, PP05, PP06, PP07, PP09, PP11	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I03; I07; I08; I09; I10; I11; I27; I29; I30; I46; I45	World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization. Joint external evaluation tool: International Health Regulations (2005), third edition [Internet]. Geneva: World Health Organization; 2022 [cited 2026 Jul 19]. ISBN: 9789240051980. Available from: https://www.who.int/publications/i/item/9789240051980 World Health Organization. WHO benchmarks for strengthening health emergency capacities: support for the implementation of International Health Regulations and health emergency prevention, preparedness, response and resilience capacities [Internet]. Geneva: World Health Organization; 2023 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/b/72254 World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Centers for Disease Control and Prevention. Public health emergency preparedness and response capabilities: national standards for state, local, tribal and territorial public health [Internet]. Atlanta (GA): CDC; 2018 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/readiness/php/phep-emergency-preparedness-and-response-capabilities/index.html Federal Emergency Management Agency. National Incident Management System. 3rd ed. [Internet]. Washington (DC): United States Department of Homeland Security; 2017 [cited 2026 Jul 19]. Available from: https://www.fema.gov/emergency-managers/nims Federal Emergency Management Agency. Homeland Security Exercise and Evaluation Program doctrine [Internet]. Washington (DC): United States Department of Homeland Security; 2020 [cited 2026 Jul 19]. Available from: https://preptoolkit.fema.gov/web/hseep-resources Sasie SD, Ayano G, Girma M, Van Zuylen P, Aragaw FM, Darebo TD, Guerrero-Torres L, Mulugeta A, Spiot M. Development and validation of an assessment tool

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D16.1	Analyse audiences, communities, stakeholders, languages, trust, access barriers and information ecosystems.	D16	Risk communication, community engagement and infodemic management	Response functions	Universal core with specialist role pathway	All phases	RP01-RP05, RP09-RP11, RP13, RP15	P4 Lead; P5 Govern and evaluate	PP06, PP08, PP09	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I01; I10; I11; I14; I27; I34; I35; I44	World Health Organization. Health Emergency and Disaster Risk Management Framework [Internet]. Geneva: World Health Organization; 2019 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/9789241516181 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Nelson C, Lurie N, Wasserman J, Zakowski S. Conceptualizing and defining public health emergency preparedness. Am J Public Health. 2007;97(Suppl 1):S9-S11. doi:10.2105/AJPH.2007.114496. Centers for Disease Control and Prevention. Public health emergency preparedness and response capabilities: national standards for state, local, tribal and territorial public health [Internet]. Atlanta (GA): CDC; 2018 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/readiness/php/phep-emergency-preparedness-and-response-capabilities/index.html World Health Organization. WHO competency framework, risk communication and community engagement: for stronger and more inclusive health emergency programs [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240092501. Available from: https://www.who.int/publications/i/item/9789240092501 World Health Organization. WHO competency framework: building a response workforce to manage infodemics [Internet]. Geneva: World Health Organization; 2021 [cited 2026 Jul 19]. ISBN: 9789240035287. Available from: https://www.who.int/publications/i/item/9789240035287 World Health Organization. Everyone's business: whole-of-society action to manage health risks and reduce socioeconomic impacts of emergencies and disasters [Internet]. Geneva: World Health Organization; 2021 [cited 2026 Jul 19]. ISBN: 9789240015081. Available from: https://www.who.int/publications/i/item/9789240015081
D16.2	Develop communication and engagement objectives linked to desired protective actions and operational decisions.	D16	Risk communication, community engagement and infodemic management	Response functions	Universal core with specialist role pathway	All phases	RP01-RP05, RP09-RP11, RP13, RP15	P4 Lead; P5 Govern and evaluate	PP06, PP08, PP09	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I01; I10; I11; I14; I27; I34; I35; I44	World Health Organization. Health Emergency and Disaster Risk Management Framework [Internet]. Geneva: World Health Organization; 2019 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/9789241516181 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Nelson C, Lurie N, Wasserman J, Zakowski S. Conceptualizing and defining public health emergency preparedness. Am J Public Health. 2007;97(Suppl 1):S9-S11. doi:10.2105/AJPH.2007.114496. Centers for Disease Control and Prevention. Public health emergency preparedness and response capabilities: national standards for state, local, tribal and territorial public health [Internet]. Atlanta (GA): CDC; 2018 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/readiness/php/phep-emergency-preparedness-and-response-capabilities/index.html World Health Organization. WHO competency framework, risk communication and community engagement: for stronger and more inclusive health emergency programs [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240092501. Available from: https://www.who.int/publications/i/item/9789240092501 World Health Organization. WHO competency framework: building a response workforce to manage infodemics [Internet]. Geneva: World Health Organization; 2021 [cited 2026 Jul 19]. ISBN: 9789240035287. Available from: https://www.who.int/publications/i/item/9789240035287 World Health Organization. Everyone's business: whole-of-society action to manage health risks and reduce socioeconomic impacts of emergencies and disasters [Internet]. Geneva: World Health Organization; 2021 [cited 2026 Jul 19]. ISBN: 9789240015081. Available from: https://www.who.int/publications/i/item/9789240015081

outcome_c ode	outcome_statement	domain_c ode	domain_title	cluster	curriculum_layer	emergency_phases	role_pathways	terminal_proficiency	required_prod ucts	assessment_context	source_anchor_ids	source_anchor_citations
D16.3	Communicate uncertainty, changing evidence, benefits, harms and trade-offs clearly and transparently.	D16	Risk communication, community engagement and infodemic management	Response functions	Universal core with specialist role pathway	All phases	RP01-RP05, RP09-RP11, RP13, RP15	P4 Lead; P5 Govern and evaluate	PP06, PP08, PP09	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I01; I10; I11; I14; I27; I34; I35; I44	World Health Organization. Health Emergency and Disaster Risk Management Framework [Internet]. Geneva: World Health Organization; 2019 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/9789241516181 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Nelson C, Lurie N, Wasserman J, Zakowski S. Conceptualizing and defining public health emergency preparedness. Am J Public Health. 2007;97(Suppl 1):S9-S11. doi:10.2105/AJPH.2007.114496. Centers for Disease Control and Prevention. Public health emergency preparedness and response capabilities: national standards for state, local, tribal and territorial public health [Internet]. Atlanta (GA): CDC; 2018 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/readiness/php/phep-emergency-preparedness-and-response-capabilities/index.html World Health Organization. WHO competency framework, risk communication and community engagement: for stronger and more inclusive health emergency programs [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240092501. Available from: https://www.who.int/publications/i/item/9789240092501 World Health Organization. WHO competency framework: building a response workforce to manage infodemics [Internet]. Geneva: World Health Organization; 2021 [cited 2026 Jul 19]. ISBN: 9789240035287. Available from: https://www.who.int/publications/i/item/9789240035287 World Health Organization. Everyone's business: whole-of-society action to manage health risks and reduce socioeconomic impacts of emergencies and disasters [Internet]. Geneva: World Health Organization; 2021 [cited 2026 Jul 19]. ISBN: 9789240015081. Available from: https://www.who.int/publications/i/item/9789240015081
D16.4	Operate community feedback, social-listening, rumour and misinformation monitoring systems.	D16	Risk communication, community engagement and infodemic management	Response functions	Universal core with specialist role pathway	All phases	RP01-RP05, RP09-RP11, RP13, RP15	P4 Lead; P5 Govern and evaluate	PP06, PP08, PP09	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I01; I10; I11; I14; I27; I34; I35; I44	World Health Organization. Health Emergency and Disaster Risk Management Framework [Internet]. Geneva: World Health Organization; 2019 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/9789241516181 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Nelson C, Lurie N, Wasserman J, Zakowski S. Conceptualizing and defining public health emergency preparedness. Am J Public Health. 2007;97(Suppl 1):S9-S11. doi:10.2105/AJPH.2007.114496. Centers for Disease Control and Prevention. Public health emergency preparedness and response capabilities: national standards for state, local, tribal and territorial public health [Internet]. Atlanta (GA): CDC; 2018 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/readiness/php/phep-emergency-preparedness-and-response-capabilities/index.html World Health Organization. WHO competency framework, risk communication and community engagement: for stronger and more inclusive health emergency programs [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240092501. Available from: https://www.who.int/publications/i/item/9789240092501 World Health Organization. WHO competency framework: building a response workforce to manage infodemics [Internet]. Geneva: World Health Organization; 2021 [cited 2026 Jul 19]. ISBN: 9789240035287. Available from: https://www.who.int/publications/i/item/9789240035287 World Health Organization. Everyone's business: whole-of-society action to manage health risks and reduce socioeconomic impacts of emergencies and disasters [Internet]. Geneva: World Health Organization; 2021 [cited 2026 Jul 19]. ISBN: 9789240015081. Available from: https://www.who.int/publications/i/item/9789240015081

outcome_c ode	outcome_statement	domain_c ode	domain_title	cluster	curriculum_layer	emergency_phases	role_pathways	terminal_proficiency	required_prod ucts	assessment_context	source_anchor_ids	source_anchor_citations
D16.5	Engage media, community leaders, civil society and affected populations in two-way dialogue and co-design.	D16	Risk communication, community engagement and infodemic management	Response functions	Universal core with specialist role pathway	All phases	RP01-RP05, RP09-RP11, RP13, RP15	P4 Lead; P5 Govern and evaluate	PP06, PP08, PP09	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I01; I10; I11; I14; I27; I34; I35; I44	World Health Organization. Health Emergency and Disaster Risk Management Framework [Internet]. Geneva: World Health Organization; 2019 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/9789241516181 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Nelson C, Lurie N, Wasserman J, Zakowski S. Conceptualizing and defining public health emergency preparedness. Am J Public Health. 2007;97(Suppl 1):S9-S11. doi:10.2105/AJPH.2007.114496. Centers for Disease Control and Prevention. Public health emergency preparedness and response capabilities: national standards for state, local, tribal and territorial public health [Internet]. Atlanta (GA): CDC; 2018 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/readiness/php/phep-emergency-preparedness-and-response-capabilities/index.html World Health Organization. WHO competency framework, risk communication and community engagement: for stronger and more inclusive health emergency programs [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240092501. Available from: https://www.who.int/publications/i/item/9789240092501 World Health Organization. WHO competency framework: building a response workforce to manage infodemics [Internet]. Geneva: World Health Organization; 2021 [cited 2026 Jul 19]. ISBN: 9789240035287. Available from: https://www.who.int/publications/i/item/9789240035287 World Health Organization. Everyone's business: whole-of-society action to manage health risks and reduce socioeconomic impacts of emergencies and disasters [Internet]. Geneva: World Health Organization; 2021 [cited 2026 Jul 19]. ISBN: 9789240015081. Available from: https://www.who.int/publications/i/item/9789240015081
D16.6	Evaluate reach, comprehension, trust, participation, behavioral response, equity and unintended effects.	D16	Risk communication, community engagement and infodemic management	Response functions	Universal core with specialist role pathway	All phases	RP01-RP05, RP09-RP11, RP13, RP15	P4 Lead; P5 Govern and evaluate	PP06, PP08, PP09	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I01; I10; I11; I14; I27; I34; I35; I44	World Health Organization. Health Emergency and Disaster Risk Management Framework [Internet]. Geneva: World Health Organization; 2019 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/9789241516181 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Nelson C, Lurie N, Wasserman J, Zakowski S. Conceptualizing and defining public health emergency preparedness. Am J Public Health. 2007;97(Suppl 1):S9-S11. doi:10.2105/AJPH.2007.114496. Centers for Disease Control and Prevention. Public health emergency preparedness and response capabilities: national standards for state, local, tribal and territorial public health [Internet]. Atlanta (GA): CDC; 2018 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/readiness/php/phep-emergency-preparedness-and-response-capabilities/index.html World Health Organization. WHO competency framework, risk communication and community engagement: for stronger and more inclusive health emergency programs [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240092501. Available from: https://www.who.int/publications/i/item/9789240092501 World Health Organization. WHO competency framework: building a response workforce to manage infodemics [Internet]. Geneva: World Health Organization; 2021 [cited 2026 Jul 19]. ISBN: 9789240035287. Available from: https://www.who.int/publications/i/item/9789240035287 World Health Organization. Everyone's business: whole-of-society action to manage health risks and reduce socioeconomic impacts of emergencies and disasters [Internet]. Geneva: World Health Organization; 2021 [cited 2026 Jul 19]. ISBN: 9789240015081. Available from: https://www.who.int/publications/i/item/9789240015081

outcome_c ode	outcome_statement	domain_c ode	domain_title	cluster	curriculum_layer	emergency_phases	role_pathways	terminal_proficiency	required_prod ucts	assessment_context	source_anchor_ids	source_anchor_citations
D17.1	Coordinate case detection, investigation, contact or exposure management, public health and social measures and targeted prevention.	D17	Public health, clinical, laboratory, infection-prevention and countermeasure operations	Response functions	Universal core with specialist role pathways	Mitigation, preparedness, response, recovery	RP02, RP04, RP05, RP07, RP11-RP13, RP16	P3 Coordinate; P4 Lead	PP02, PP06, PP09, PP11	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I01; I07; I08; I09; I10; I11; I27; I38; I43; I39	World Health Organization. Health Emergency and Disaster Risk Management Framework [Internet]. Geneva: World Health Organization; 2019 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/9789241516181 World Health Organization. Joint external evaluation tool: International Health Regulations (2005), third edition [Internet]. 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D17.2	Plan clinical pathways, referral, surge, triage, isolation, treatment, rehabilitation and safe dignified care.	D17	Public health, clinical, laboratory, infection-prevention and countermeasure operations	Response functions	Universal core with specialist role pathways	Mitigation, preparedness, response, recovery	RP02, RP04, RP05, RP07, RP11-RP13, RP16	P3 Coordinate; P4 Lead	PP02, PP06, PP09, PP11	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I01; I07; I08; I09; I10; I11; I27; I38; I43; I39	World Health Organization. Health Emergency and Disaster Risk Management Framework [Internet]. Geneva: World Health Organization; 2019 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/9789241516181 World Health Organization. Joint external evaluation tool: International Health Regulations (2005), third edition [Internet]. Geneva: World Health Organization; 2022 [cited 2026 Jul 19]. ISBN: 9789240051980. Available from: https://www.who.int/publications/i/item/9789240051980 World Health Organization. WHO benchmarks for strengthening health emergency capacities: support for the implementation of International Health Regulations and health emergency prevention, preparedness, response and resilience capacities [Internet]. Geneva: World Health Organization; 2023 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/b/72254 World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Centers for Disease Control and Prevention. Public health emergency preparedness and response capabilities: national standards for state, local, tribal and territorial public health [Internet]. Atlanta (GA): CDC; 2018 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/readiness/php/phep-emergency-preparedness-and-response-capabilities/index.html World Health Organization. Laboratory biosafety manual. 4th ed. [Internet]. Geneva: World Health Organization; 2020 [cited 2026 Jul 19]. ISBN: 9789240011311. Available from: https://www.who.int/publications/i/item/9789240011311 World Health Organization, Food and Agriculture Organization of the United Nations, World Organisation for Animal Health. Guidance for One Health field epidemiology curriculum development [Internet]. Geneva: World Health Organization; 2023 [cited 2026 Jul 19]. ISBN: 9789240083875. doi:10.20506/cohfe.3433. World Health Organization. Framework and toolkit for infection prevention and control in outbreak preparedness, readiness and response at the national level [Internet]. Geneva: World

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D17.3	Coordinate specimen strategy, diagnostics, laboratory networks, biosafety, biosecurity and result reporting.	D17	Public health, clinical, laboratory, infection-prevention and countermeasure operations	Response functions	Universal core with specialist role pathways	Mitigation, preparedness, response, recovery	RP02, RP04, RP05, RP07, RP11-RP13, RP16	P3 Coordinate; P4 Lead	PP02, PP06, PP09, PP11	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I01; I07; I08; I09; I10; I11; I27; I38; I43; I39	World Health Organization. Health Emergency and Disaster Risk Management Framework [Internet]. Geneva: World Health Organization; 2019 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/9789241516181 World Health Organization. Joint external evaluation tool: International Health Regulations (2005), third edition [Internet]. Geneva: World Health Organization; 2022 [cited 2026 Jul 19]. 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D17.4	Implement infection prevention and control across facilities, communities, transport and congregate settings.	D17	Public health, clinical, laboratory, infection-prevention and countermeasure operations	Response functions	Universal core with specialist role pathways	Mitigation, preparedness, response, recovery	RP02, RP04, RP05, RP07, RP11-RP13, RP16	P3 Coordinate; P4 Lead	PP02, PP06, PP09, PP11	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I01; I07; I08; I09; I10; I11; I27; I38; I43; I39	World Health Organization. Health Emergency and Disaster Risk Management Framework [Internet]. Geneva: World Health Organization; 2019 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/9789241516181 World Health Organization. Joint external evaluation tool: International Health Regulations (2005), third edition [Internet]. Geneva: World Health Organization; 2022 [cited 2026 Jul 19]. ISBN: 9789240051980. Available from: https://www.who.int/publications/i/item/9789240051980 World Health Organization. WHO benchmarks for strengthening health emergency capacities: support for the implementation of International Health Regulations and health emergency prevention, preparedness, response and resilience capacities [Internet]. Geneva: World Health Organization; 2023 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/b/72254 World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Centers for Disease Control and Prevention. Public health emergency preparedness and response capabilities: national standards for state, local, tribal and territorial public health [Internet]. Atlanta (GA): CDC; 2018 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/readiness/php/phep-emergency-preparedness-and-response-capabilities/index.html World Health Organization. Laboratory biosafety manual. 4th ed. [Internet]. Geneva: World Health Organization; 2020 [cited 2026 Jul 19]. ISBN: 9789240011311. Available from: https://www.who.int/publications/i/item/9789240011311 World Health Organization, Food and Agriculture Organization of the United Nations, World Organisation for Animal Health. Guidance for One Health field epidemiology curriculum development [Internet]. Geneva: World Health Organization; 2023 [cited 2026 Jul 19]. ISBN: 9789240083875. doi:10.20506/cohfe.3433. World Health Organization. Framework and toolkit for infection prevention and control in outbreak preparedness, readiness and response at the national level [Internet]. Geneva: World

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D17.5	Plan selection, procurement, allocation, delivery, monitoring and safety of vaccines, medicines and other countermeasures.	D17	Public health, clinical, laboratory, infection-prevention and countermeasure operations	Response functions	Universal core with specialist role pathways	Mitigation, preparedness, response, recovery	RP02, RP04, RP05, RP07, RP11-RP13, RP16	P3 Coordinate; P4 Lead	PP02, PP06, PP09, PP11	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I01; I07; I08; I09; I10; I11; I27; I38; I43; I39	World Health Organization. Health Emergency and Disaster Risk Management Framework [Internet]. Geneva: World Health Organization; 2019 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/9789241516181 World Health Organization. Joint external evaluation tool: International Health Regulations (2005), third edition [Internet]. Geneva: World Health Organization; 2022 [cited 2026 Jul 19]. ISBN: 9789240051980. Available from: https://www.who.int/publications/i/item/9789240051980 World Health Organization. WHO benchmarks for strengthening health emergency capacities: support for the implementation of International Health Regulations and health emergency prevention, preparedness, response and resilience capacities [Internet]. Geneva: World Health Organization; 2023 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/b/72254 World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Centers for Disease Control and Prevention. Public health emergency preparedness and response capabilities: national standards for state, local, tribal and territorial public health [Internet]. Atlanta (GA): CDC; 2018 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/readiness/php/phep-emergency-preparedness-and-response-capabilities/index.html World Health Organization. Laboratory biosafety manual. 4th ed. [Internet]. Geneva: World Health Organization; 2020 [cited 2026 Jul 19]. ISBN: 9789240011311. Available from: https://www.who.int/publications/i/item/9789240011311 World Health Organization, Food and Agriculture Organization of the United Nations, World Organisation for Animal Health. Guidance for One Health field epidemiology curriculum development [Internet]. Geneva: World Health Organization; 2023 [cited 2026 Jul 19]. ISBN: 9789240083875. doi:10.20506/cohfe.3433. World Health Organization. Framework and toolkit for infection prevention and control in outbreak preparedness, readiness and response at the national level [Internet]. Geneva: World
D17.6	Maintain essential health services, quality, equity and continuity while monitoring health-system strain.	D17	Public health, clinical, laboratory, infection-prevention and countermeasure operations	Response functions	Universal core with specialist role pathways	Mitigation, preparedness, response, recovery	RP02, RP04, RP05, RP07, RP11-RP13, RP16	P3 Coordinate; P4 Lead	PP02, PP06, PP09, PP11	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I01; I07; I08; I09; I10; I11; I27; I38; I43; I39	World Health Organization. Health Emergency and Disaster Risk Management Framework [Internet]. Geneva: World Health Organization; 2019 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/9789241516181 World Health Organization. Joint external evaluation tool: International Health Regulations (2005), third edition [Internet]. Geneva: World Health Organization; 2022 [cited 2026 Jul 19]. ISBN: 9789240051980. Available from: https://www.who.int/publications/i/item/9789240051980 World Health Organization. WHO benchmarks for strengthening health emergency capacities: support for the implementation of International Health Regulations and health emergency prevention, preparedness, response and resilience capacities [Internet]. Geneva: World Health Organization; 2023 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/b/72254 World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Centers for Disease Control and Prevention. Public health emergency preparedness and response capabilities: national standards for state, local, tribal and territorial public health [Internet]. Atlanta (GA): CDC; 2018 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/readiness/php/phep-emergency-preparedness-and-response-capabilities/index.html World Health Organization. Laboratory biosafety manual. 4th ed. [Internet]. Geneva: World Health Organization; 2020 [cited 2026 Jul 19]. ISBN: 9789240011311. Available from: https://www.who.int/publications/i/item/9789240011311 World Health Organization, Food and Agriculture Organization of the United Nations, World Organisation for Animal Health. Guidance for One Health field epidemiology curriculum development [Internet]. Geneva: World Health Organization; 2023 [cited 2026 Jul 19]. ISBN: 9789240083875. doi:10.20506/cohfe.3433. World Health Organization. Framework and toolkit for infection prevention and control in outbreak preparedness, readiness and response at the national level [Internet]. Geneva: World

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D18.1	Apply One Health and multisectoral coordination to zoonotic, food-safety, environmental and antimicrobial-resistance threats.	D18	One Health, environmental, humanitarian, mass-gathering and cross-border response, including mental health and psychosocial support	Response functions	Universal core with context-adaptable hazards	Prevention, mitigation, preparedness, response, recovery	RP01-RP06, RP09-RP13, RP15, RP16	P3 Coordinate; P4 Lead	PP02, PP06, PP09, PP11	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I01; I02; I06; I07; I08; I09; I10; I11; I22; I43; I44	World Health Organization. Health Emergency and Disaster Risk Management Framework [Internet]. Geneva: World Health Organization; 2019 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/9789241516181 United Nations Office for Disaster Risk Reduction. Sendai Framework for Disaster Risk Reduction 2015-2030 [Internet]. 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D18.2	Assess water, sanitation, hygiene, shelter, nutrition, protection, vector and environmental-health needs in humanitarian settings.	D18	One Health, environmental, humanitarian, mass-gathering and cross-border response, including mental health and psychosocial support	Response functions	Universal core with context-adaptable hazards	Prevention, mitigation, preparedness, response, recovery	RP01-RP06, RP09-RP13, RP15, RP16	P3 Coordinate; P4 Lead	PP02, PP06, PP09, PP11	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I01; I02; I06; I07; I08; I09; I10; I11; I22; I43; I44	World Health Organization. Health Emergency and Disaster Risk Management Framework [Internet]. Geneva: World Health Organization; 2019 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/9789241516181 United Nations Office for Disaster Risk Reduction. Sendai Framework for Disaster Risk Reduction 2015-2030 [Internet]. Geneva: United Nations; 2015 [cited 2026 Jul 19]. Available from: https://www.undrr.org/publication/sendai-framework-disaster-risk-reduction-2015-2030 World Health Organization. International Health Regulations (2005): text incorporating amendments adopted in 2014, 2022 and 2024 [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. Available from: https://apps.who.int/gb/bd/pdf_files/IHR_2014-2022-2024-en.pdf World Health Organization. Joint external evaluation tool: International Health Regulations (2005), third edition [Internet]. Geneva: World Health Organization; 2022 [cited 2026 Jul 19]. ISBN: 9789240051980. Available from: https://www.who.int/publications/i/item/9789240051980 World Health Organization. WHO benchmarks for strengthening health emergency capacities: support for the implementation of International Health Regulations and health emergency prevention, preparedness, response and resilience capacities [Internet]. Geneva: World Health Organization; 2023 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/b/72254 World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Olu O, Usman A, Kalambay K, Anyangwe S, Voyi K, Orach CG, Azazh A, Mapatano MA, Nsenga N, Manga L, Woldetsadik S, Nguessan F, Benson A. What should the African health workforce know about disasters? Proposed competencies for strengthening public health disaster risk management education in Africa. BMC Med Educ. 2018;18:60. doi:10.1186/s12909-018-1163-9. World Health Organization, Food and Agriculture Organization of the United Nations, World Organisation for Animal Health. Guidance for One Health field epidemiology curriculum development [Internet]. Geneva:

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D18.3	Coordinate health functions for displacement, conflict, mass gatherings and civil-protection operations.	D18	One Health, environmental, humanitarian, mass-gathering and cross-border response, including mental health and psychosocial support	Response functions	Universal core with context-adaptable hazards	Prevention, mitigation, preparedness, response, recovery	RP01-RP06, RP09-RP13, RP15, RP16	P3 Coordinate; P4 Lead	PP02, PP06, PP09, PP11	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I01; I02; I06; I07; I08; I09; I10; I11; I22; I43; I44	World Health Organization. Health Emergency and Disaster Risk Management Framework [Internet]. Geneva: World Health Organization; 2019 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/9789241516181 United Nations Office for Disaster Risk Reduction. Sendai Framework for Disaster Risk Reduction 2015-2030 [Internet]. 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D18.4	Establish cross-border surveillance, information exchange, referral, laboratory and response arrangements.	D18	One Health, environmental, humanitarian, mass-gathering and cross-border response, including mental health and psychosocial support	Response functions	Universal core with context-adaptable hazards	Prevention, mitigation, preparedness, response, recovery	RP01-RP06, RP09-RP13, RP15, RP16	P3 Coordinate; P4 Lead	PP02, PP06, PP09, PP11	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I01; I02; I06; I07; I08; I09; I10; I11; I22; I43; I44	World Health Organization. Health Emergency and Disaster Risk Management Framework [Internet]. Geneva: World Health Organization; 2019 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/9789241516181 United Nations Office for Disaster Risk Reduction. Sendai Framework for Disaster Risk Reduction 2015-2030 [Internet]. Geneva: United Nations; 2015 [cited 2026 Jul 19]. Available from: https://www.undrr.org/publication/sendai-framework-disaster-risk-reduction-2015-2030 World Health Organization. International Health Regulations (2005): text incorporating amendments adopted in 2014, 2022 and 2024 [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. Available from: https://apps.who.int/gb/bd/pdf_files/IHR_2014-2022-2024-en.pdf World Health Organization. Joint external evaluation tool: International Health Regulations (2005), third edition [Internet]. Geneva: World Health Organization; 2022 [cited 2026 Jul 19]. ISBN: 9789240051980. Available from: https://www.who.int/publications/i/item/9789240051980 World Health Organization. WHO benchmarks for strengthening health emergency capacities: support for the implementation of International Health Regulations and health emergency prevention, preparedness, response and resilience capacities [Internet]. Geneva: World Health Organization; 2023 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/b/72254 World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Olu O, Usman A, Kalambay K, Anyangwe S, Voyi K, Orach CG, Azazh A, Mapatano MA, Nsenga N, Manga L, Woldetsadik S, Nguessan F, Benson A. What should the African health workforce know about disasters? Proposed competencies for strengthening public health disaster risk management education in Africa. BMC Med Educ. 2018;18:60. doi:10.1186/s12909-018-1163-9. World Health Organization, Food and Agriculture Organization of the United Nations, World Organisation for Animal Health. Guidance for One Health field epidemiology curriculum development [Internet]. Geneva:

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D18.5	Apply humanitarian principles, do-no-harm, safeguarding, cultural awareness, mental health and psychosocial support, and protection of affected populations.	D18	One Health, environmental, humanitarian, mass-gathering and cross-border response, including mental health and psychosocial support	Response functions	Universal core with context-adaptable hazards	Prevention, mitigation, preparedness, response, recovery	RP01-RP06, RP09-RP13, RP15, RP16	P3 Coordinate; P4 Lead	PP02, PP06, PP09, PP11	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I01; I02; I06; I07; I08; I09; I10; I11; I22; I43; I44	World Health Organization. Health Emergency and Disaster Risk Management Framework [Internet]. Geneva: World Health Organization; 2019 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/9789241516181 United Nations Office for Disaster Risk Reduction. 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D18.6	Integrate multisectoral objectives and activities into incident plans, situation reports and recovery arrangements.	D18	One Health, environmental, humanitarian, mass-gathering and cross-border response, including mental health and psychosocial support	Response functions	Universal core with context-adaptable hazards	Prevention, mitigation, preparedness, response, recovery	RP01-RP06, RP09-RP13, RP15, RP16	P3 Coordinate; P4 Lead	PP02, PP06, PP09, PP11	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I01; I02; I06; I07; I08; I09; I10; I11; I22; I43; I44	World Health Organization. Health Emergency and Disaster Risk Management Framework [Internet]. Geneva: World Health Organization; 2019 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/9789241516181 United Nations Office for Disaster Risk Reduction. Sendai Framework for Disaster Risk Reduction 2015-2030 [Internet]. Geneva: United Nations; 2015 [cited 2026 Jul 19]. Available from: https://www.undrr.org/publication/sendai-framework-disaster-risk-reduction-2015-2030 World Health Organization. International Health Regulations (2005): text incorporating amendments adopted in 2014, 2022 and 2024 [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. Available from: https://apps.who.int/gb/bd/pdf_files/IHR_2014-2022-2024-en.pdf World Health Organization. Joint external evaluation tool: International Health Regulations (2005), third edition [Internet]. Geneva: World Health Organization; 2022 [cited 2026 Jul 19]. ISBN: 9789240051980. Available from: https://www.who.int/publications/i/item/9789240051980 World Health Organization. WHO benchmarks for strengthening health emergency capacities: support for the implementation of International Health Regulations and health emergency prevention, preparedness, response and resilience capacities [Internet]. Geneva: World Health Organization; 2023 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/b/72254 World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Olu O, Usman A, Kalambay K, Anyangwe S, Voyi K, Orach CG, Azazh A, Mapatano MA, Nsenga N, Manga L, Woldetsadik S, Nguessan F, Benson A. What should the African health workforce know about disasters? Proposed competencies for strengthening public health disaster risk management education in Africa. BMC Med Educ. 2018;18:60. doi:10.1186/s12909-018-1163-9. World Health Organization, Food and Agriculture Organization of the United Nations, World Organisation for Animal Health. Guidance for One Health field epidemiology curriculum development [Internet]. Geneva:

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D19.1	Translate operational needs into digital-system, data, interoperability, dashboard and communication requirements.	D19	Digital emergency management, geographic information systems, modeling, artificial intelligence and cybersecurity	Response functions	Universal digital literacy with optional specialist depth	All phases	RP01-RP06, RP09-RP10, RP13-RP15	P3 Coordinate; P4 Lead; P5 Govern digital systems	PP01, PP02, PP08, PP10, PP11	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I10; I11; I36; I37; I40; I41; I42; I46	World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 World Health Organization. Public health intelligence competency framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240115408. Available from: https://www.who.int/publications/i/item/9789240115408 World Health Organization. Public health intelligence curriculum [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240115385. Available from: https://www.who.int/publications/i/item/9789240115385 World Health Organization. Ethics and governance of artificial intelligence for health: WHO guidance [Internet]. Geneva: World Health Organization; 2021 [cited 2026 Jul 19]. ISBN: 9789240029200. Available from: https://www.who.int/publications/i/item/9789240029200 World Health Organization. Regulatory considerations on artificial intelligence for health [Internet]. Geneva: World Health Organization; 2023 [cited 2026 Jul 19]. ISBN: 9789240078871. Available from: https://www.who.int/publications/i/item/9789240078871 World Health Organization. Ethics and governance of artificial intelligence for health: guidance on large multi-modal models [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240084759. Available from: https://www.who.int/publications/i/item/9789240084759 Sasie SD, Ayano G, Girma M, Van Zuylen P, Aragaw FM, Darebo TD, Guerrero-Torres L, Mulugeta A, Spigt M. Development and validation of an assessment tool for public health emergency management program. Glob Health Res Policy. 2025;10:44. doi:10.1186/s41256-025-00423-z.
D19.2	Use geographic information systems and modeling to support risk assessment, resource allocation, forecasting and operational planning.	D19	Digital emergency management, geographic information systems, modeling, artificial intelligence and cybersecurity	Response functions	Universal digital literacy with optional specialist depth	All phases	RP01-RP06, RP09-RP10, RP13-RP15	P3 Coordinate; P4 Lead; P5 Govern digital systems	PP01, PP02, PP08, PP10, PP11	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I10; I11; I36; I37; I40; I41; I42; I46	World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 World Health Organization. Public health intelligence competency framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240115408. Available from: https://www.who.int/publications/i/item/9789240115408 World Health Organization. Public health intelligence curriculum [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240115385. Available from: https://www.who.int/publications/i/item/9789240115385 World Health Organization. Ethics and governance of artificial intelligence for health: WHO guidance [Internet]. Geneva: World Health Organization; 2021 [cited 2026 Jul 19]. ISBN: 9789240029200. Available from: https://www.who.int/publications/i/item/9789240029200 World Health Organization. Regulatory considerations on artificial intelligence for health [Internet]. Geneva: World Health Organization; 2023 [cited 2026 Jul 19]. ISBN: 9789240078871. Available from: https://www.who.int/publications/i/item/9789240078871 World Health Organization. Ethics and governance of artificial intelligence for health: guidance on large multi-modal models [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240084759. Available from: https://www.who.int/publications/i/item/9789240084759 Sasie SD, Ayano G, Girma M, Van Zuylen P, Aragaw FM, Darebo TD, Guerrero-Torres L, Mulugeta A, Spigt M. Development and validation of an assessment tool for public health emergency management program. Glob Health Res Policy. 2025;10:44. doi:10.1186/s41256-025-00423-z.

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D19.3	Critically appraise artificial-intelligence use cases, data readiness, performance, calibration, external validity, bias and fairness.	D19	Digital emergency management, geographic information systems, modeling, artificial intelligence and cybersecurity	Response functions	Universal digital literacy with optional specialist depth	All phases	RP01-RP06, RP09-RP10, RP13-RP15	P3 Coordinate; P4 Lead; P5 Govern digital systems	PP01, PP02, PP08, PP10, PP11	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I10; I11; I36; I37; I40; I41; I42; I46	World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 World Health Organization. Public health intelligence competency framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240115408. Available from: https://www.who.int/publications/i/item/9789240115408 World Health Organization. Public health intelligence curriculum [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240115385. Available from: https://www.who.int/publications/i/item/9789240115385 World Health Organization. Ethics and governance of artificial intelligence for health: WHO guidance [Internet]. Geneva: World Health Organization; 2021 [cited 2026 Jul 19]. ISBN: 9789240029200. Available from: https://www.who.int/publications/i/item/9789240029200 World Health Organization. Regulatory considerations on artificial intelligence for health [Internet]. Geneva: World Health Organization; 2023 [cited 2026 Jul 19]. ISBN: 9789240078871. Available from: https://www.who.int/publications/i/item/9789240078871 World Health Organization. Ethics and governance of artificial intelligence for health: guidance on large multi-modal models [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240084759. Available from: https://www.who.int/publications/i/item/9789240084759 Sasie SD, Ayano G, Girma M, Van Zuylen P, Aragaw FM, Darebo TD, Guerrero-Torres L, Mulugeta A, Spigt M. Development and validation of an assessment tool for public health emergency management program. Glob Health Res Policy. 2025;10:44. doi:10.1186/s41256-025-00423-z.
D19.4	Establish human oversight, documentation, procurement, monitoring, incident reporting and discontinuation criteria for artificial-intelligence tools.	D19	Digital emergency management, geographic information systems, modeling, artificial intelligence and cybersecurity	Response functions	Universal digital literacy with optional specialist depth	All phases	RP01-RP06, RP09-RP10, RP13-RP15	P3 Coordinate; P4 Lead; P5 Govern digital systems	PP01, PP02, PP08, PP10, PP11	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I10; I11; I36; I37; I40; I41; I42; I46	World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 World Health Organization. Public health intelligence competency framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240115408. Available from: https://www.who.int/publications/i/item/9789240115408 World Health Organization. Public health intelligence curriculum [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240115385. Available from: https://www.who.int/publications/i/item/9789240115385 World Health Organization. Ethics and governance of artificial intelligence for health: WHO guidance [Internet]. Geneva: World Health Organization; 2021 [cited 2026 Jul 19]. ISBN: 9789240029200. Available from: https://www.who.int/publications/i/item/9789240029200 World Health Organization. Regulatory considerations on artificial intelligence for health [Internet]. Geneva: World Health Organization; 2023 [cited 2026 Jul 19]. ISBN: 9789240078871. Available from: https://www.who.int/publications/i/item/9789240078871 World Health Organization. Ethics and governance of artificial intelligence for health: guidance on large multi-modal models [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240084759. Available from: https://www.who.int/publications/i/item/9789240084759 Sasie SD, Ayano G, Girma M, Van Zuylen P, Aragaw FM, Darebo TD, Guerrero-Torres L, Mulugeta A, Spigt M. Development and validation of an assessment tool for public health emergency management program. Glob Health Res Policy. 2025;10:44. doi:10.1186/s41256-025-00423-z.

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D19.5	Assess cybersecurity, access control, data protection, communications resilience, backup and degraded-mode operations.	D19	Digital emergency management, geographic information systems, modeling, artificial intelligence and cybersecurity	Response functions	Universal digital literacy with optional specialist depth	All phases	RP01-RP06, RP09-RP10, RP13-RP15	P3 Coordinate; P4 Lead; P5 Govern digital systems	PP01, PP02, PP08, PP10, PP11	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I10; I11; I36; I37; I40; I41; I42; I46	World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 World Health Organization. Public health intelligence competency framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240115408. Available from: https://www.who.int/publications/i/item/9789240115408 World Health Organization. Public health intelligence curriculum [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240115385. Available from: https://www.who.int/publications/i/item/9789240115385 World Health Organization. Ethics and governance of artificial intelligence for health: WHO guidance [Internet]. Geneva: World Health Organization; 2021 [cited 2026 Jul 19]. ISBN: 9789240029200. Available from: https://www.who.int/publications/i/item/9789240029200 World Health Organization. Regulatory considerations on artificial intelligence for health [Internet]. Geneva: World Health Organization; 2023 [cited 2026 Jul 19]. ISBN: 9789240078871. Available from: https://www.who.int/publications/i/item/9789240078871 World Health Organization. Ethics and governance of artificial intelligence for health: guidance on large multi-modal models [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240084759. Available from: https://www.who.int/publications/i/item/9789240084759 Sasie SD, Ayano G, Girma M, Van Zuylen P, Aragaw FM, Darebo TD, Guerrero-Torres L, Mulugeta A, Spigt M. Development and validation of an assessment tool for public health emergency management program. Glob Health Res Policy. 2025;10:44. doi:10.1186/s41256-025-00423-z.
D19.6	Evaluate whether a digital intervention improves decisions, equity, timeliness and operational outcomes.	D19	Digital emergency management, geographic information systems, modeling, artificial intelligence and cybersecurity	Response functions	Universal digital literacy with optional specialist depth	All phases	RP01-RP06, RP09-RP10, RP13-RP15	P3 Coordinate; P4 Lead; P5 Govern digital systems	PP01, PP02, PP08, PP10, PP11	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I10; I11; I36; I37; I40; I41; I42; I46	World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 World Health Organization. Public health intelligence competency framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240115408. Available from: https://www.who.int/publications/i/item/9789240115408 World Health Organization. Public health intelligence curriculum [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240115385. Available from: https://www.who.int/publications/i/item/9789240115385 World Health Organization. Ethics and governance of artificial intelligence for health: WHO guidance [Internet]. Geneva: World Health Organization; 2021 [cited 2026 Jul 19]. ISBN: 9789240029200. Available from: https://www.who.int/publications/i/item/9789240029200 World Health Organization. Regulatory considerations on artificial intelligence for health [Internet]. Geneva: World Health Organization; 2023 [cited 2026 Jul 19]. ISBN: 9789240078871. Available from: https://www.who.int/publications/i/item/9789240078871 World Health Organization. Ethics and governance of artificial intelligence for health: guidance on large multi-modal models [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240084759. Available from: https://www.who.int/publications/i/item/9789240084759 Sasie SD, Ayano G, Girma M, Van Zuylen P, Aragaw FM, Darebo TD, Guerrero-Torres L, Mulugeta A, Spigt M. Development and validation of an assessment tool for public health emergency management program. Glob Health Res Policy. 2025;10:44. doi:10.1186/s41256-025-00423-z.

outcome_c ode	outcome_statement	domain_c ode	domain_title	cluster	curriculum_layer	emergency_phases	role_pathways	terminal_proficiency	required_prod ucts	assessment_context	source_anchor_ids	source_anchor_citations
D20.1	Conduct health and health-system recovery-needs assessment, including long-term physical, mental, social and service impacts.	D20	Recovery, transition, rehabilitation and building back better	Recovery and institutional learning	Universal core with recovery role pathway	Response, recovery, mitigation, learning	RP01-RP08, RP12-RP15, RP16	P4 Lead; P5 Govern and evaluate	PP02, PP03, PP07, PP11, PP12	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I01; I02; I09; I10; I11; I13; I14; I22; I23; I44	World Health Organization. Health Emergency and Disaster Risk Management Framework [Internet]. Geneva: World Health Organization; 2019 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/9789241516181 United Nations Office for Disaster Risk Reduction. Sendai Framework for Disaster Risk Reduction 2015-2030 [Internet]. Geneva: United Nations; 2015 [cited 2026 Jul 19]. Available from: https://www.undrr.org/publication/sendai-framework-disaster-risk-reduction-2015-2030 World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Rose DA, Murthy S, Brooks J, Bryant J. The evolution of public health emergency management as a field of practice. Am J Public Health. 2017;107(S2):S126-S133. doi:10.2105/AJPH.2017.303947. Nelson C, Lurie N, Wasserman J, Zakowski S. Conceptualizing and defining public health emergency preparedness. Am J Public Health. 2007;97(Suppl 1):S9-S11. doi:10.2105/AJPH.2007.114496. Olu O, Usman A, Kalambay K, Anyangwe S, Voyi K, Orach CG, Azazh A, Mapatano MA, Nsenga N, Manga L, Woldetsadik S, Nguessan F, Benson A. What should the African health workforce know about disasters? Proposed competencies for strengthening public health disaster risk management education in Africa. BMC Med Educ. 2018;18:60. doi:10.1186/s12909-018-1163-9. Hung KKC, MacDermot MK, Hui TSI, Chan SY, Mashino S, Mok CPY, Leung PH, Kayano R, Abrahams J, Wong CS, Chan EYY, Graham CA. Mapping study for health emergency and disaster risk management competencies and curricula: literature review and cross-sectional survey. Global Health. 2024;20:15. doi:10.1186/s12992-023-01010-y. World Health Organization. Everyone's business: whole-of-society action to manage health risks and reduce socioeconomic impacts of emergencies and disasters [Internet]. Geneva: World Health Organization; 2021 [cited 2026 Jul 19]. ISBN: 9789240015081. Available from: https://www.who.int/publications/i/item/9789240015081
D20.2	Define transition criteria, governance, responsibilities and handover from emergency to routine or recovery structures.	D20	Recovery, transition, rehabilitation and building back better	Recovery and institutional learning	Universal core with recovery role pathway	Response, recovery, mitigation, learning	RP01-RP08, RP12-RP15, RP16	P4 Lead; P5 Govern and evaluate	PP02, PP03, PP07, PP11, PP12	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I01; I02; I09; I10; I11; I13; I14; I22; I23; I44	World Health Organization. Health Emergency and Disaster Risk Management Framework [Internet]. Geneva: World Health Organization; 2019 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/9789241516181 United Nations Office for Disaster Risk Reduction. Sendai Framework for Disaster Risk Reduction 2015-2030 [Internet]. Geneva: United Nations; 2015 [cited 2026 Jul 19]. Available from: https://www.undrr.org/publication/sendai-framework-disaster-risk-reduction-2015-2030 World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Rose DA, Murthy S, Brooks J, Bryant J. The evolution of public health emergency management as a field of practice. Am J Public Health. 2017;107(S2):S126-S133. doi:10.2105/AJPH.2017.303947. Nelson C, Lurie N, Wasserman J, Zakowski S. Conceptualizing and defining public health emergency preparedness. Am J Public Health. 2007;97(Suppl 1):S9-S11. doi:10.2105/AJPH.2007.114496. Olu O, Usman A, Kalambay K, Anyangwe S, Voyi K, Orach CG, Azazh A, Mapatano MA, Nsenga N, Manga L, Woldetsadik S, Nguessan F, Benson A. What should the African health workforce know about disasters? Proposed competencies for strengthening public health disaster risk management education in Africa. BMC Med Educ. 2018;18:60. doi:10.1186/s12909-018-1163-9. Hung KKC, MacDermot MK, Hui TSI, Chan SY, Mashino S, Mok CPY, Leung PH, Kayano R, Abrahams J, Wong CS, Chan EYY, Graham CA. Mapping study for health emergency and disaster risk management competencies and curricula: literature review and cross-sectional survey. Global Health. 2024;20:15. doi:10.1186/s12992-023-01010-y. World Health Organization. Everyone's business: whole-of-society action to manage health risks and reduce socioeconomic impacts of emergencies and disasters [Internet]. Geneva: World Health Organization; 2021 [cited 2026 Jul 19]. ISBN: 9789240015081. Available from: https://www.who.int/publications/i/item/9789240015081

outcome_c ode	outcome_statement	domain_c ode	domain_title	cluster	curriculum_layer	emergency_phases	role_pathways	terminal_proficiency	required_prod ucts	assessment_context	source_anchor_ids	source_anchor_citations
D20.3	Prioritize restoration of essential services, workforce, supply chains, laboratories, infrastructure and information systems.	D20	Recovery, transition, rehabilitation and building back better	Recovery and institutional learning	Universal core with recovery role pathway	Response, recovery, mitigation, learning	RP01-RP08, RP12-RP15, RP16	P4 Lead; P5 Govern and evaluate	PP02, PP03, PP07, PP11, PP12	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I01; I02; I09; I10; I11; I13; I14; I22; I23; I44	World Health Organization. Health Emergency and Disaster Risk Management Framework [Internet]. Geneva: World Health Organization; 2019 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/9789241516181 United Nations Office for Disaster Risk Reduction. Sendai Framework for Disaster Risk Reduction 2015-2030 [Internet]. Geneva: United Nations; 2015 [cited 2026 Jul 19]. Available from: https://www.undrr.org/publication/sendai-framework-disaster-risk-reduction-2015-2030 World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Rose DA, Murthy S, Brooks J, Bryant J. The evolution of public health emergency management as a field of practice. Am J Public Health. 2017;107(S2):S126-S133. doi:10.2105/AJPH.2017.303947. Nelson C, Lurie N, Wasserman J, Zakowski S. Conceptualizing and defining public health emergency preparedness. Am J Public Health. 2007;97(Suppl 1):S9-S11. doi:10.2105/AJPH.2007.114496. Olu O, Usman A, Kalambay K, Anyangwe S, Voyi K, Orach CG, Azazh A, Mapatano MA, Nsenga N, Manga L, Woldetsadik S, Nguessan F, Benson A. What should the African health workforce know about disasters? Proposed competencies for strengthening public health disaster risk management education in Africa. BMC Med Educ. 2018;18:60. doi:10.1186/s12909-018-1163-9. Hung KKC, MacDermot MK, Hui TSI, Chan SY, Mashino S, Mok CPY, Leung PH, Kayano R, Abrahams J, Wong CS, Chan EYY, Graham CA. Mapping study for health emergency and disaster risk management competencies and curricula: literature review and cross-sectional survey. Global Health. 2024;20:15. doi:10.1186/s12992-023-01010-y. World Health Organization. Everyone's business: whole-of-society action to manage health risks and reduce socioeconomic impacts of emergencies and disasters [Internet]. Geneva: World Health Organization; 2021 [cited 2026 Jul 19]. ISBN: 9789240015081. Available from: https://www.who.int/publications/i/item/9789240015081
D20.4	Integrate rehabilitation, psychosocial support, community recovery and support for populations at disproportionate risk.	D20	Recovery, transition, rehabilitation and building back better	Recovery and institutional learning	Universal core with recovery role pathway	Response, recovery, mitigation, learning	RP01-RP08, RP12-RP15, RP16	P4 Lead; P5 Govern and evaluate	PP02, PP03, PP07, PP11, PP12	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I01; I02; I09; I10; I11; I13; I14; I22; I23; I44	World Health Organization. Health Emergency and Disaster Risk Management Framework [Internet]. Geneva: World Health Organization; 2019 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/9789241516181 United Nations Office for Disaster Risk Reduction. Sendai Framework for Disaster Risk Reduction 2015-2030 [Internet]. Geneva: United Nations; 2015 [cited 2026 Jul 19]. Available from: https://www.undrr.org/publication/sendai-framework-disaster-risk-reduction-2015-2030 World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Rose DA, Murthy S, Brooks J, Bryant J. The evolution of public health emergency management as a field of practice. Am J Public Health. 2017;107(S2):S126-S133. doi:10.2105/AJPH.2017.303947. Nelson C, Lurie N, Wasserman J, Zakowski S. Conceptualizing and defining public health emergency preparedness. Am J Public Health. 2007;97(Suppl 1):S9-S11. doi:10.2105/AJPH.2007.114496. Olu O, Usman A, Kalambay K, Anyangwe S, Voyi K, Orach CG, Azazh A, Mapatano MA, Nsenga N, Manga L, Woldetsadik S, Nguessan F, Benson A. What should the African health workforce know about disasters? Proposed competencies for strengthening public health disaster risk management education in Africa. BMC Med Educ. 2018;18:60. doi:10.1186/s12909-018-1163-9. Hung KKC, MacDermot MK, Hui TSI, Chan SY, Mashino S, Mok CPY, Leung PH, Kayano R, Abrahams J, Wong CS, Chan EYY, Graham CA. Mapping study for health emergency and disaster risk management competencies and curricula: literature review and cross-sectional survey. Global Health. 2024;20:15. doi:10.1186/s12992-023-01010-y. World Health Organization. Everyone's business: whole-of-society action to manage health risks and reduce socioeconomic impacts of emergencies and disasters [Internet]. Geneva: World Health Organization; 2021 [cited 2026 Jul 19]. ISBN: 9789240015081. Available from: https://www.who.int/publications/i/item/9789240015081

outcome_c ode	outcome_statement	domain_c ode	domain_title	cluster	curriculum_layer	emergency_phases	role_pathways	terminal_proficiency	required_prod ucts	assessment_context	source_anchor_ids	source_anchor_citations
D20.5	Apply building-back-better and mitigation principles to infrastructure, policies, systems and community resilience.	D20	Recovery, transition, rehabilitation and building back better	Recovery and institutional learning	Universal core with recovery role pathway	Response, recovery, mitigation, learning	RP01-RP08, RP12-RP15, RP16	P4 Lead; P5 Govern and evaluate	PP02, PP03, PP07, PP11, PP12	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I01; I02; I09; I10; I11; I13; I14; I22; I23; I44	World Health Organization. Health Emergency and Disaster Risk Management Framework [Internet]. Geneva: World Health Organization; 2019 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/9789241516181 United Nations Office for Disaster Risk Reduction. Sendai Framework for Disaster Risk Reduction 2015-2030 [Internet]. Geneva: United Nations; 2015 [cited 2026 Jul 19]. Available from: https://www.undrr.org/publication/sendai-framework-disaster-risk-reduction-2015-2030 World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Rose DA, Murthy S, Brooks J, Bryant J. The evolution of public health emergency management as a field of practice. Am J Public Health. 2017;107(S2):S126-S133. doi:10.2105/AJPH.2017.303947. Nelson C, Lurie N, Wasserman J, Zakowski S. Conceptualizing and defining public health emergency preparedness. Am J Public Health. 2007;97(Suppl 1):S9-S11. doi:10.2105/AJPH.2007.114496. Olu O, Usman A, Kalambay K, Anyangwe S, Voyi K, Orach CG, Azazh A, Mapatano MA, Nsenga N, Manga L, Woldetsadik S, Nguessan F, Benson A. What should the African health workforce know about disasters? Proposed competencies for strengthening public health disaster risk management education in Africa. BMC Med Educ. 2018;18:60. doi:10.1186/s12909-018-1163-9. Hung KKC, MacDermot MK, Hui TSI, Chan SY, Mashino S, Mok CPY, Leung PH, Kayano R, Abrahams J, Wong CS, Chan EYY, Graham CA. Mapping study for health emergency and disaster risk management competencies and curricula: literature review and cross-sectional survey. Global Health. 2024;20:15. doi:10.1186/s12992-023-01010-y. World Health Organization. Everyone's business: whole-of-society action to manage health risks and reduce socioeconomic impacts of emergencies and disasters [Internet]. Geneva: World Health Organization; 2021 [cited 2026 Jul 19]. ISBN: 9789240015081. Available from: https://www.who.int/publications/i/item/9789240015081
D20.6	Establish recovery objectives, financing, indicators, reporting and review arrangements.	D20	Recovery, transition, rehabilitation and building back better	Recovery and institutional learning	Universal core with recovery role pathway	Response, recovery, mitigation, learning	RP01-RP08, RP12-RP15, RP16	P4 Lead; P5 Govern and evaluate	PP02, PP03, PP07, PP11, PP12	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I01; I02; I09; I10; I11; I13; I14; I22; I23; I44	World Health Organization. Health Emergency and Disaster Risk Management Framework [Internet]. Geneva: World Health Organization; 2019 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/9789241516181 United Nations Office for Disaster Risk Reduction. Sendai Framework for Disaster Risk Reduction 2015-2030 [Internet]. Geneva: United Nations; 2015 [cited 2026 Jul 19]. Available from: https://www.undrr.org/publication/sendai-framework-disaster-risk-reduction-2015-2030 World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Rose DA, Murthy S, Brooks J, Bryant J. The evolution of public health emergency management as a field of practice. Am J Public Health. 2017;107(S2):S126-S133. doi:10.2105/AJPH.2017.303947. Nelson C, Lurie N, Wasserman J, Zakowski S. Conceptualizing and defining public health emergency preparedness. Am J Public Health. 2007;97(Suppl 1):S9-S11. doi:10.2105/AJPH.2007.114496. Olu O, Usman A, Kalambay K, Anyangwe S, Voyi K, Orach CG, Azazh A, Mapatano MA, Nsenga N, Manga L, Woldetsadik S, Nguessan F, Benson A. What should the African health workforce know about disasters? Proposed competencies for strengthening public health disaster risk management education in Africa. BMC Med Educ. 2018;18:60. doi:10.1186/s12909-018-1163-9. Hung KKC, MacDermot MK, Hui TSI, Chan SY, Mashino S, Mok CPY, Leung PH, Kayano R, Abrahams J, Wong CS, Chan EYY, Graham CA. Mapping study for health emergency and disaster risk management competencies and curricula: literature review and cross-sectional survey. Global Health. 2024;20:15. doi:10.1186/s12992-023-01010-y. World Health Organization. Everyone's business: whole-of-society action to manage health risks and reduce socioeconomic impacts of emergencies and disasters [Internet]. Geneva: World Health Organization; 2021 [cited 2026 Jul 19]. ISBN: 9789240015081. Available from: https://www.who.int/publications/i/item/9789240015081

outcome_c ode	outcome_statement	domain_c ode	domain_title	cluster	curriculum_layer	emergency_phases	role_pathways	terminal_proficiency	required_prod ucts	assessment_context	source_anchor_ids	source_anchor_citations
D21.1	Develop a logic model and indicators for structure, process, outputs, outcomes, equity, cost and sustainability.	D21	Monitoring, evaluation, after-action review, corrective action, research and institutional learning	Recovery and institutional learning	Universal core	All phases and learning	RP01-RP06, RP08-RP10, RP13-RP15	P4 Lead; P5 Govern and evaluate	PP04, PP05, PP06, PP07, PP08, PP10, PP11, PP12	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I03; I08; I09; I10; I11; I23; I31; I32; I46; I48	World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization. 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D21.2	Monitor incident objectives, operational performance, information timeliness, resource use, workforce and community experience.	D21	Monitoring, evaluation, after-action review, corrective action, research and institutional learning	Recovery and institutional learning	Universal core	All phases and learning	RP01-RP06, RP08-RP10, RP13-RP15	P4 Lead; P5 Govern and evaluate	PP04, PP05, PP06, PP07, PP08, PP10, PP11, PP12	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I03; I08; I09; I10; I11; I23; I31; I32; I46; I48	World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization. WHO benchmarks for strengthening health emergency capacities: support for the implementation of International Health Regulations and health emergency prevention, preparedness, response and resilience capacities [Internet]. Geneva: World Health Organization; 2023 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/b/72254 World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Hung KKC, MacDermot MK, Hui TSI, Chan SY, Mashino S, Mok CPY, Leung PH, Kayano R, Abrahams J, Wong CS, Chan EYY, Graham CA. Mapping study for health emergency and disaster risk management competencies and curricula: literature review and cross-sectional survey. Global Health. 2024;20:15. doi:10.1186/s12992-023-01010-y. World Health Organization. WHO simulation exercise manual: a practical guide and tool for planning, conducting and evaluating simulation exercises for outbreaks and public health emergency preparedness and response [Internet]. Geneva: World Health Organization; 2017 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/WHO-WHE-CPI-2017.10 World Health Organization. Guidance for after action review [Internet]. Geneva: World Health Organization; 2019 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/WHO-WHE-CPI-2019.4 Sasie SD, Ayano G, Girma M, Van Zuylen P, Aragaw FM, Darebo TD, Guerrero-Torres L, Mulugeta A, Spigt M. Development and validation of an assessment tool for public health emergency management program. Glob Health Res Policy. 2025;10:44. doi:10.1186/s41256-025-00423-z. Proctor EK, Silmere H, Raghavan R, Hovmand P, Aarons G, Bunger A, Griffey R, Henslev M. Outcomes for implementation research: conceptual

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D21.3	Plan and facilitate debriefs, intra-action reviews, early-action reviews and after-action reviews using inclusive evidence.	D21	Monitoring, evaluation, after-action review, corrective action, research and institutional learning	Recovery and institutional learning	Universal core	All phases and learning	RP01-RP06, RP08-RP10, RP13-RP15	P4 Lead; P5 Govern and evaluate	PP04, PP05, PP06, PP07, PP08, PP10, PP11, PP12	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I03; I08; I09; I10; I11; I23; I31; I32; I46; I48	World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization. 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D21.4	Conduct root-cause and contributing-factor analysis and distinguish corrective from preventive action.	D21	Monitoring, evaluation, after-action review, corrective action, research and institutional learning	Recovery and institutional learning	Universal core	All phases and learning	RP01-RP06, RP08-RP10, RP13-RP15	P4 Lead; P5 Govern and evaluate	PP04, PP05, PP06, PP07, PP08, PP10, PP11, PP12	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I03; I08; I09; I10; I11; I23; I31; I32; I46; I48	World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization. WHO benchmarks for strengthening health emergency capacities: support for the implementation of International Health Regulations and health emergency prevention, preparedness, response and resilience capacities [Internet]. Geneva: World Health Organization; 2023 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/b/72254 World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Hung KKC, MacDermot MK, Hui TSI, Chan SY, Mashino S, Mok CPY, Leung PH, Kayano R, Abrahams J, Wong CS, Chan EYY, Graham CA. Mapping study for health emergency and disaster risk management competencies and curricula: literature review and cross-sectional survey. Global Health. 2024;20:15. doi:10.1186/s12992-023-01010-y. World Health Organization. WHO simulation exercise manual: a practical guide and tool for planning, conducting and evaluating simulation exercises for outbreaks and public health emergency preparedness and response [Internet]. Geneva: World Health Organization; 2017 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/WHO-WHE-CPI-2017.10 World Health Organization. Guidance for after action review [Internet]. Geneva: World Health Organization; 2019 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/WHO-WHE-CPI-2019.4 Sasie SD, Ayano G, Girma M, Van Zuylen P, Aragaw FM, Darebo TD, Guerrero-Torres L, Mulugeta A, Spigt M. Development and validation of an assessment tool for public health emergency management program. Glob Health Res Policy. 2025;10:44. doi:10.1186/s41256-025-00423-z. Proctor EK, Silmere H, Raghavan R, Hovmand P, Aarons G, Bunger A, Griffey R, Henslev M. Outcomes for implementation research: conceptual

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D21.5	Develop, assign, finance, track, verify and close improvement actions and retest critical capabilities.	D21	Monitoring, evaluation, after-action review, corrective action, research and institutional learning	Recovery and institutional learning	Universal core	All phases and learning	RP01-RP06, RP08-RP10, RP13-RP15	P4 Lead; P5 Govern and evaluate	PP04, PP05, PP06, PP07, PP08, PP10, PP11, PP12	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I03; I08; I09; I10; I11; I23; I31; I32; I46; I48	World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization. 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D21.6	Formulate operational research and evaluation questions, apply ethical methods and maintain a learning repository and revision cycle.	D21	Monitoring, evaluation, after-action review, corrective action, research and institutional learning	Recovery and institutional learning	Universal core	All phases and learning	RP01-RP06, RP08-RP10, RP13-RP15	P4 Lead; P5 Govern and evaluate	PP04, PP05, PP06, PP07, PP08, PP10, PP11, PP12	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I03; I08; I09; I10; I11; I23; I31; I32; I46; I48	World Health Organization. Framework for a Public Health Emergency Operations Centre [Internet]. Geneva: World Health Organization; 2015 [cited 2026 Jul 19]. ISBN: 9789241565134. Available from: https://www.who.int/publications/i/item/framework-for-a-public-health-emergency-operations-centre World Health Organization. WHO benchmarks for strengthening health emergency capacities: support for the implementation of International Health Regulations and health emergency prevention, preparedness, response and resilience capacities [Internet]. Geneva: World Health Organization; 2023 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/b/72254 World Health Organization. Emergency response framework, edition 2.1 [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240058064. Available from: https://www.who.int/publications/i/item/9789240058064 World Health Organization. National health emergency alert and response framework [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jul 19]. ISBN: 9789240113893. Available from: https://www.who.int/publications/i/item/9789240113893 World Health Organization, International Association of National Public Health Institutes. Framework for health emergency preparedness and response capabilities for national public health agencies [Internet]. Geneva: World Health Organization; 2026 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/B09726 Hung KKC, MacDermot MK, Hui TSI, Chan SY, Mashino S, Mok CPY, Leung PH, Kayano R, Abrahams J, Wong CS, Chan EYY, Graham CA. Mapping study for health emergency and disaster risk management competencies and curricula: literature review and cross-sectional survey. Global Health. 2024;20:15. doi:10.1186/s12992-023-01010-y. World Health Organization. WHO simulation exercise manual: a practical guide and tool for planning, conducting and evaluating simulation exercises for outbreaks and public health emergency preparedness and response [Internet]. Geneva: World Health Organization; 2017 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/WHO-WHE-CPI-2017.10 World Health Organization. Guidance for after action review [Internet]. Geneva: World Health Organization; 2019 [cited 2026 Jul 19]. Available from: https://www.who.int/publications/i/item/WHO-WHE-CPI-2019.4 Sasie SD, Ayano G, Girma M, Van Zuylen P, Aragaw FM, Darebo TD, Guerrero-Torres L, Mulugeta A, Spigt M. Development and validation of an assessment tool for public health emergency management program. Glob Health Res Policy. 2025;10:44. doi:10.1186/s41256-025-00423-z. Proctor EK, Silmere H, Raghavan R, Hovmand P, Aarons G, Bunger A, Griffey R, Henslev M. Outcomes for implementation research: conceptual

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D22.1	Apply adaptive, ethical and accountable leadership under time pressure, uncertainty, scrutiny and constrained resources.	D22	Leadership, negotiation, teamwork, teaching, mentorship and workforce development	Recovery and institutional learning	Universal core with role-pathway depth	All phases	RP01-RP16	P4 Lead; P5 Govern and evaluate	PP04, PP05, PP06, PP08, PP09, PP12	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I13; I20; I21; I22; I23; I25; I27; I34; I35; I19; I18; I50	Rose DA, Murthy S, Brooks J, Bryant J. The evolution of public health emergency management as a field of practice. Am J Public Health. 2017;107(S2):S126-S133. doi:10.2105/AJPH.2017.303947. Eteng WEO, Collard E, Anebonam U, Magodi S, Kamara N, Guyasa M, Mankoula W. Designing a competency-based curriculum for an advanced training program in public health emergency management: a stepwise, mixed method approach, 2023. BMC Med Educ. 2024;24:1344. doi:10.1186/s12909-024-06341-x. Getaneh MW, Pascal A, Luka-Lawal RK, Kutubana MK, Bunting-Graden JA, Ezembro ETC, Tadicha SD, Essone PN, Magodi S, Anebonam U, Mankoula W, Obama WE. The Africa Centres for Disease Control public health emergency management fellowship: insights from the inaugural cohort. Front Public Health. 2025;13:1444354. doi:10.3389/fpubh.2025.1444354. Olu O, Usman A, Kalambay K, Anyangwe S, Voyi K, Orach CG, Azazh A, Mapatano MA, Nsenga N, Manga L, Woldetsadik S, Nguessan F, Benson A. What should the African health workforce know about disasters? Proposed competencies for strengthening public health disaster risk management education in Africa. BMC Med Educ. 2018;18:60. doi:10.1186/s12909-018-1163-9. Hung KKC, MacDermot MK, Hui TSI, Chan SY, Mashino S, Mok CPY, Leung PH, Kayano R, Abrahams J, Wong CS, Chan EYY, Graham CA. Mapping study for health emergency and disaster risk management competencies and curricula: literature review and cross-sectional survey. Global Health. 2024;20:15. doi:10.1186/s12992-023-01010-y. European Centre for Disease Prevention and Control. Public health emergency preparedness: core competencies for European Union Member States [Internet]. Stockholm: ECDC; 2017 [cited 2026 Jul 19]. doi:10.2900/049462. Centers for Disease Control and Prevention. Public health emergency preparedness and response capabilities: national standards for state, local, tribal and territorial public health [Internet]. Atlanta (GA): CDC; 2018 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/readiness/php/phep-emergency-preparedness-and-response-capabilities/index.html World Health Organization. WHO competency framework, risk communication and community engagement: for stronger and more inclusive health emergency programs [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240092501. Available from: https://www.who.int/publications/i/item/9789240092501 World Health Organization. WHO competency framework: building a response workforce to manage infodemics [Internet]. Geneva: World Health Organization; 2021 [cited 2026 Jul 19]. ISBN: 9789240035287. Available from: https://www.who.int/publications/i/item/9789240035287 Krishnan S, Espinosa C. Podornik MN. Halle S. Aponte JJ. Brown CK. Vadi SJ.
D22.2	Build psychologically safe multidisciplinary teams with clear expectations, feedback, delegation and accountability.	D22	Leadership, negotiation, teamwork, teaching, mentorship and workforce development	Recovery and institutional learning	Universal core with role-pathway depth	All phases	RP01-RP16	P4 Lead; P5 Govern and evaluate	PP04, PP05, PP06, PP08, PP09, PP12	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I13; I20; I21; I22; I23; I25; I27; I34; I35; I19; I18; I50	Rose DA, Murthy S, Brooks J, Bryant J. The evolution of public health emergency management as a field of practice. Am J Public Health. 2017;107(S2):S126-S133. doi:10.2105/AJPH.2017.303947. Eteng WEO, Collard E, Anebonam U, Magodi S, Kamara N, Guyasa M, Mankoula W. Designing a competency-based curriculum for an advanced training program in public health emergency management: a stepwise, mixed method approach, 2023. BMC Med Educ. 2024;24:1344. doi:10.1186/s12909-024-06341-x. Getaneh MW, Pascal A, Luka-Lawal RK, Kutubana MK, Bunting-Graden JA, Ezembro ETC, Tadicha SD, Essone PN, Magodi S, Anebonam U, Mankoula W, Obama WE. The Africa Centres for Disease Control public health emergency management fellowship: insights from the inaugural cohort. Front Public Health. 2025;13:1444354. doi:10.3389/fpubh.2025.1444354. Olu O, Usman A, Kalambay K, Anyangwe S, Voyi K, Orach CG, Azazh A, Mapatano MA, Nsenga N, Manga L, Woldetsadik S, Nguessan F, Benson A. What should the African health workforce know about disasters? Proposed competencies for strengthening public health disaster risk management education in Africa. BMC Med Educ. 2018;18:60. doi:10.1186/s12909-018-1163-9. Hung KKC, MacDermot MK, Hui TSI, Chan SY, Mashino S, Mok CPY, Leung PH, Kayano R, Abrahams J, Wong CS, Chan EYY, Graham CA. Mapping study for health emergency and disaster risk management competencies and curricula: literature review and cross-sectional survey. Global Health. 2024;20:15. doi:10.1186/s12992-023-01010-y. European Centre for Disease Prevention and Control. Public health emergency preparedness: core competencies for European Union Member States [Internet]. Stockholm: ECDC; 2017 [cited 2026 Jul 19]. doi:10.2900/049462. Centers for Disease Control and Prevention. Public health emergency preparedness and response capabilities: national standards for state, local, tribal and territorial public health [Internet]. Atlanta (GA): CDC; 2018 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/readiness/php/phep-emergency-preparedness-and-response-capabilities/index.html World Health Organization. WHO competency framework, risk communication and community engagement: for stronger and more inclusive health emergency programs [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240092501. Available from: https://www.who.int/publications/i/item/9789240092501 World Health Organization. WHO competency framework: building a response workforce to manage infodemics [Internet]. Geneva: World Health Organization; 2021 [cited 2026 Jul 19]. ISBN: 9789240035287. Available from: https://www.who.int/publications/i/item/9789240035287 Krishnan S, Espinosa C. Podornik MN. Halle S. Aponte JJ. Brown CK. Vadi SJ.

outcome_c ode	outcome_statement	domain_c ode	domain_title	cluster	curriculum_layer	emergency_phases	role_pathways	terminal_proficiency	required_prod ucts	assessment_context	source_anchor_ids	source_anchor_citations
D22.3	Negotiate priorities, resources, authority and agreements and manage conflict across institutions and sectors.	D22	Leadership, negotiation, teamwork, teaching, mentorship and workforce development	Recovery and institutional learning	Universal core with role-pathway depth	All phases	RP01-RP16	P4 Lead; P5 Govern and evaluate	PP04, PP05, PP06, PP08, PP09, PP12	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I13; I20; I21; I22; I23; I25; I27; I34; I35; I19; I18; I50	Rose DA, Murthy S, Brooks J, Bryant J. The evolution of public health emergency management as a field of practice. Am J Public Health. 2017;107(S2):S126-S133. doi:10.2105/AJPH.2017.303947. Eteng WEO, Collard E, Anebonam U, Magodi S, Kamara N, Guyasa M, Mankoula W. Designing a competency-based curriculum for an advanced training program in public health emergency management: a stepwise, mixed method approach, 2023. BMC Med Educ. 2024;24:1344. doi:10.1186/s12909-024-06341-x. Getaneh MW, Pascal A, Luka-Lawal RK, Kutubana MK, Bunting-Graden JA, Ezembro ETC, Tadicha SD, Essone PN, Magodi S, Anebonam U, Mankoula W, Obama WE. The Africa Centres for Disease Control public health emergency management fellowship: insights from the inaugural cohort. Front Public Health. 2025;13:1444354. doi:10.3389/fpubh.2025.1444354. Olu O, Usman A, Kalambay K, Anyangwe S, Voyi K, Orach CG, Azazh A, Mapatano MA, Nsenga N, Manga L, Woldetsadik S, Nguessan F, Benson A. What should the African health workforce know about disasters? Proposed competencies for strengthening public health disaster risk management education in Africa. BMC Med Educ. 2018;18:60. doi:10.1186/s12909-018-1163-9. Hung KKC, MacDermot MK, Hui TSI, Chan SY, Mashino S, Mok CPY, Leung PH, Kayano R, Abrahams J, Wong CS, Chan EYY, Graham CA. Mapping study for health emergency and disaster risk management competencies and curricula: literature review and cross-sectional survey. Global Health. 2024;20:15. doi:10.1186/s12992-023-01010-y. European Centre for Disease Prevention and Control. Public health emergency preparedness: core competencies for European Union Member States [Internet]. Stockholm: ECDC; 2017 [cited 2026 Jul 19]. doi:10.2900/049462. Centers for Disease Control and Prevention. Public health emergency preparedness and response capabilities: national standards for state, local, tribal and territorial public health [Internet]. Atlanta (GA): CDC; 2018 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/readiness/php/phep-emergency-preparedness-and-response-capabilities/index.html World Health Organization. WHO competency framework, risk communication and community engagement: for stronger and more inclusive health emergency programs [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240092501. Available from: https://www.who.int/publications/i/item/9789240092501 World Health Organization. WHO competency framework: building a response workforce to manage infodemics [Internet]. Geneva: World Health Organization; 2021 [cited 2026 Jul 19]. ISBN: 9789240035287. Available from: https://www.who.int/publications/i/item/9789240035287 Krishnan S, Espinosa C. Podornik MN. Halle S. Aponte JJ. Brown CK. Vadi SJ.
D22.4	Communicate strategically with political, technical, operational, media, partner and community audiences.	D22	Leadership, negotiation, teamwork, teaching, mentorship and workforce development	Recovery and institutional learning	Universal core with role-pathway depth	All phases	RP01-RP16	P4 Lead; P5 Govern and evaluate	PP04, PP05, PP06, PP08, PP09, PP12	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I13; I20; I21; I22; I23; I25; I27; I34; I35; I19; I18; I50	Rose DA, Murthy S, Brooks J, Bryant J. The evolution of public health emergency management as a field of practice. Am J Public Health. 2017;107(S2):S126-S133. doi:10.2105/AJPH.2017.303947. Eteng WEO, Collard E, Anebonam U, Magodi S, Kamara N, Guyasa M, Mankoula W. Designing a competency-based curriculum for an advanced training program in public health emergency management: a stepwise, mixed method approach, 2023. BMC Med Educ. 2024;24:1344. doi:10.1186/s12909-024-06341-x. Getaneh MW, Pascal A, Luka-Lawal RK, Kutubana MK, Bunting-Graden JA, Ezembro ETC, Tadicha SD, Essone PN, Magodi S, Anebonam U, Mankoula W, Obama WE. The Africa Centres for Disease Control public health emergency management fellowship: insights from the inaugural cohort. Front Public Health. 2025;13:1444354. doi:10.3389/fpubh.2025.1444354. Olu O, Usman A, Kalambay K, Anyangwe S, Voyi K, Orach CG, Azazh A, Mapatano MA, Nsenga N, Manga L, Woldetsadik S, Nguessan F, Benson A. What should the African health workforce know about disasters? Proposed competencies for strengthening public health disaster risk management education in Africa. BMC Med Educ. 2018;18:60. doi:10.1186/s12909-018-1163-9. Hung KKC, MacDermot MK, Hui TSI, Chan SY, Mashino S, Mok CPY, Leung PH, Kayano R, Abrahams J, Wong CS, Chan EYY, Graham CA. Mapping study for health emergency and disaster risk management competencies and curricula: literature review and cross-sectional survey. Global Health. 2024;20:15. doi:10.1186/s12992-023-01010-y. European Centre for Disease Prevention and Control. Public health emergency preparedness: core competencies for European Union Member States [Internet]. Stockholm: ECDC; 2017 [cited 2026 Jul 19]. doi:10.2900/049462. Centers for Disease Control and Prevention. Public health emergency preparedness and response capabilities: national standards for state, local, tribal and territorial public health [Internet]. Atlanta (GA): CDC; 2018 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/readiness/php/phep-emergency-preparedness-and-response-capabilities/index.html World Health Organization. WHO competency framework, risk communication and community engagement: for stronger and more inclusive health emergency programs [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240092501. Available from: https://www.who.int/publications/i/item/9789240092501 World Health Organization. WHO competency framework: building a response workforce to manage infodemics [Internet]. Geneva: World Health Organization; 2021 [cited 2026 Jul 19]. ISBN: 9789240035287. Available from: https://www.who.int/publications/i/item/9789240035287 Krishnan S, Espinosa C. Podornik MN. Halle S. Aponte JJ. Brown CK. Vadi SJ.

outcome_c ode	outcome_statement	domain_c ode	domain_title	cluster	curriculum_layer	emergency_phases	role_pathways	terminal_proficiency	required_prod ucts	assessment_context	source_anchor_ids	source_anchor_citations
D22.5	Design and facilitate adult learning, simulation debriefs, just-in-time training and role-specific orientation.	D22	Leadership, negotiation, teamwork, teaching, mentorship and workforce development	Recovery and institutional learning	Universal core with role-pathway depth	All phases	RP01-RP16	P4 Lead; P5 Govern and evaluate	PP04, PP05, PP06, PP08, PP09, PP12	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I13; I20; I21; I22; I23; I25; I27; I34; I35; I19; I18; I50	Rose DA, Murthy S, Brooks J, Bryant J. The evolution of public health emergency management as a field of practice. Am J Public Health. 2017;107(S2):S126-S133. doi:10.2105/AJPH.2017.303947. Eteng WEO, Collard E, Anebonam U, Magodi S, Kamara N, Guyasa M, Mankoula W. Designing a competency-based curriculum for an advanced training program in public health emergency management: a stepwise, mixed method approach, 2023. BMC Med Educ. 2024;24:1344. doi:10.1186/s12909-024-06341-x. Getaneh MW, Pascal A, Luka-Lawal RK, Kutubana MK, Bunting-Graden JA, Ezembro ETC, Tadicha SD, Essone PN, Magodi S, Anebonam U, Mankoula W, Obama WE. The Africa Centres for Disease Control public health emergency management fellowship: insights from the inaugural cohort. Front Public Health. 2025;13:1444354. doi:10.3389/fpubh.2025.1444354. Olu O, Usman A, Kalambay K, Anyangwe S, Voyi K, Orach CG, Azazh A, Mapatano MA, Nsenga N, Manga L, Woldetsadik S, Nguessan F, Benson A. What should the African health workforce know about disasters? Proposed competencies for strengthening public health disaster risk management education in Africa. BMC Med Educ. 2018;18:60. doi:10.1186/s12909-018-1163-9. Hung KKC, MacDermot MK, Hui TSI, Chan SY, Mashino S, Mok CPY, Leung PH, Kayano R, Abrahams J, Wong CS, Chan EYY, Graham CA. Mapping study for health emergency and disaster risk management competencies and curricula: literature review and cross-sectional survey. Global Health. 2024;20:15. doi:10.1186/s12992-023-01010-y. European Centre for Disease Prevention and Control. Public health emergency preparedness: core competencies for European Union Member States [Internet]. Stockholm: ECDC; 2017 [cited 2026 Jul 19]. doi:10.2900/049462. Centers for Disease Control and Prevention. Public health emergency preparedness and response capabilities: national standards for state, local, tribal and territorial public health [Internet]. Atlanta (GA): CDC; 2018 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/readiness/php/phep-emergency-preparedness-and-response-capabilities/index.html World Health Organization. WHO competency framework, risk communication and community engagement: for stronger and more inclusive health emergency programs [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240092501. Available from: https://www.who.int/publications/i/item/9789240092501 World Health Organization. WHO competency framework: building a response workforce to manage infodemics [Internet]. Geneva: World Health Organization; 2021 [cited 2026 Jul 19]. ISBN: 9789240035287. Available from: https://www.who.int/publications/i/item/9789240035287 Krishnan S, Espinosa C. Podornik MN. Halle S. Aponte JJ. Brown CK. Vadi SJ.
D22.6	Establish mentoring, supervision, remediation, succession and continuing-professional-development systems.	D22	Leadership, negotiation, teamwork, teaching, mentorship and workforce development	Recovery and institutional learning	Universal core with role-pathway depth	All phases	RP01-RP16	P4 Lead; P5 Govern and evaluate	PP04, PP05, PP06, PP08, PP09, PP12	Requires team, mandate and institutional conditions; observed simulation accepted when workplace conditions are absent	I13; I20; I21; I22; I23; I25; I27; I34; I35; I19; I18; I50	Rose DA, Murthy S, Brooks J, Bryant J. The evolution of public health emergency management as a field of practice. Am J Public Health. 2017;107(S2):S126-S133. doi:10.2105/AJPH.2017.303947. Eteng WEO, Collard E, Anebonam U, Magodi S, Kamara N, Guyasa M, Mankoula W. Designing a competency-based curriculum for an advanced training program in public health emergency management: a stepwise, mixed method approach, 2023. BMC Med Educ. 2024;24:1344. doi:10.1186/s12909-024-06341-x. Getaneh MW, Pascal A, Luka-Lawal RK, Kutubana MK, Bunting-Graden JA, Ezembro ETC, Tadicha SD, Essone PN, Magodi S, Anebonam U, Mankoula W, Obama WE. The Africa Centres for Disease Control public health emergency management fellowship: insights from the inaugural cohort. Front Public Health. 2025;13:1444354. doi:10.3389/fpubh.2025.1444354. Olu O, Usman A, Kalambay K, Anyangwe S, Voyi K, Orach CG, Azazh A, Mapatano MA, Nsenga N, Manga L, Woldetsadik S, Nguessan F, Benson A. What should the African health workforce know about disasters? Proposed competencies for strengthening public health disaster risk management education in Africa. BMC Med Educ. 2018;18:60. doi:10.1186/s12909-018-1163-9. Hung KKC, MacDermot MK, Hui TSI, Chan SY, Mashino S, Mok CPY, Leung PH, Kayano R, Abrahams J, Wong CS, Chan EYY, Graham CA. Mapping study for health emergency and disaster risk management competencies and curricula: literature review and cross-sectional survey. Global Health. 2024;20:15. doi:10.1186/s12992-023-01010-y. European Centre for Disease Prevention and Control. Public health emergency preparedness: core competencies for European Union Member States [Internet]. Stockholm: ECDC; 2017 [cited 2026 Jul 19]. doi:10.2900/049462. Centers for Disease Control and Prevention. Public health emergency preparedness and response capabilities: national standards for state, local, tribal and territorial public health [Internet]. Atlanta (GA): CDC; 2018 [cited 2026 Jul 19]. Available from: https://www.cdc.gov/readiness/php/phep-emergency-preparedness-and-response-capabilities/index.html World Health Organization. WHO competency framework, risk communication and community engagement: for stronger and more inclusive health emergency programs [Internet]. Geneva: World Health Organization; 2024 [cited 2026 Jul 19]. ISBN: 9789240092501. Available from: https://www.who.int/publications/i/item/9789240092501 World Health Organization. WHO competency framework: building a response workforce to manage infodemics [Internet]. Geneva: World Health Organization; 2021 [cited 2026 Jul 19]. ISBN: 9789240035287. Available from: https://www.who.int/publications/i/item/9789240035287 Krishnan S, Espinosa C. Podornik MN. Halle S. Aponte JJ. Brown CK. Vadi SJ.