

Sharing research data in
a public health emergency:
Implementation guide

Foreword from the Data Sharing Working Group

The urgency and scale of public health emergencies demand a swift, coordinated, and evidence-based response. The timely and transparent sharing of data from research is a fundamental pillar of such a response.

The GloPID-R Roadmap for Data Sharing in a Public Health Emergency (2019), outlined areas where research funders ought to act to prepare a research ecosystem that has the capacity, capability, and incentives to share the data it generates during and in response to a health emergency.

Now, with the development of this Implementation Guide, we take the next essential step: transforming the strategic framework into concrete actions.

This guide provides funders with practical steps for putting the Roadmap into practice, with:

- **Suggested wording to include in data sharing policies;**
- **Best practice for the launch and conduct of rapid response funding calls;**
- **Strategies to embed and enable sharing of research data as routine practice in all funded research projects.**

The actions proposed within the guide are suggestions for how funders could implement the Roadmap, aimed to reflect the current state of best practice. We acknowledge that the rapidly evolving field of sharing research data, coupled with the new knowledge gained with each outbreak, means that the state of best practice is subject to change. We aim to be responsive, and hence consider this document to be 'living' rather than static.

Looking ahead, there is more work to be done. For instance, this guide is limited in its recommendations to strengthen capacity for sharing of research data, which will be a focus for the GloPID-R Data Sharing Working Group moving forward. The guide could also go further within the area of FAIR (Findable, Accessible, Interoperable, and Reusable) data, and this is something we intend to include in future versions.

In this critical period, where the future of public health depends on our collective response, this guide provides funders with essential tools for a data-driven public health response.

Signed the GloPID-R Data Sharing Working Group Members and Chairs

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Section 1

Introduction

1.1 About the implementation guidance

The rapid sharing of preliminary and definitive research data in a public health emergency (PHE) is a critical component of an effective, evidence-informed response. Research funding organisations play a vital role, generating an enabling environment to strengthen data sharing capacity, sustaining an ever-warm response capability and supporting responses during PHEs.

We, the Global Research Collaboration for Infectious Disease Preparedness (GloPID-R), developed the [GloPID-R Roadmap for Data Sharing in PHEs](#)¹ in 2019. The Roadmap outlines principles and recommendations for funders to accelerate effective data sharing among their grantees, to influence practice across what funders fund, and how they fund it.

This Implementation Guidance aims to support funders in delivering on our Roadmap recommendations with a pragmatic set of actions to adopt.

As with the Roadmap, this guide advocates the implementation of data sharing policies that include explicit sharing obligations. This requires strategic investments to build capability and capacity to share data globally.

This guide is part of a suite of implementation tools for research funding organisations (Box 1). Further details and access to the complete set of [tools can be found here](#)². (<https://www.glopid-r.org/ressources/data-sharing-working-group-implementation-guide>)

GloPID-R Data Sharing Implementation Tools

Implementation Guide

A guide of recommended actions toward implementing the roadmap, reflecting best practices and lessons learnt during implementation from our membership.

Repository of Resources

A collection of relevant resources shared by our members to support grantees in data sharing. Including, data management plan guidelines, templates, examples and support, guidance to support data sharing, and details of recommended repositories.

Funder Self-assessment Tool (to be developed)

Identifying what is minimum good practice by funders to support implementation. This will include a ranked categorisation system and include a self-assessment tool with the minimum agreed good practice.

Annual Supplement for the Roadmap (to be developed)

To describe emerging best practices, beyond that which is captured in the Roadmap.

Mapping Report

A report of GloPID-R members' policies and practices aligned to the recommendations in the roadmap.

Box 1. An overview of the GloPID-R data sharing implementation tools

¹ Norton A, Pardinaz-Solis R, Carson G, et al. GloPID-R roadmap for data sharing in public health emergencies. Global Research Collaboration for Infectious Disease Preparedness; 2019. Available from: <https://www.glopid-r.org/wp-content/uploads/2019/06/glopid-r-roadmap-for-data-sharing.pdf>

Section 1

1.2 Aim

Funding organisations remain committed to working to ensure that interim and final quality assured research data relating to a disease outbreak is shared as rapidly as possible. Building on the recommendations made in the Roadmap, the aim of this guide is to provide a practical approach to the implementation of the Roadmap within research funding organisations.

In this guide, by 'data', we explicitly mean data which is generated by research, funded by research funding organisations such as our GloPID-R membership.

1.3 Intended audience

This guide is intended to support the implementation of the Roadmap within research funding organisations in order to drive consistent adoption and policy alignment across the GloPID-R coalition where feasible. Recognising that the actions outlined in sections 1-3 are currently achievable only for some funders, this guide aims to support implementation across the coalition. Ongoing experience sharing will continue to be provided through the GloPID-R Data Sharing Working Group meetings.

1.4 Implementation guide overview

This guide directly aligns with the Roadmap, and hence actions are structured as follows:

- Actions to improve data sharing in PHE **by grantees of GloPID-R members and other funders**, including policies to direct action during an outbreak and details on what investments are needed to build and sustain capacity ahead of time (Section 2).
- Actions toward improving Data Sharing in PHE by **all Stakeholders** (Section 3).
- Actions to 'Foster a Culture and Create an Infrastructure where Data Sharing is an integral part of research' (Section 4).

The final section, Section 5, provides a summary of these actions aligned to the respective period within the funding cycle at which they should be implemented.

Section 2

Methods (for developing this guide)

This guide was developed by the GloPID-R Research and Policy Team with the GloPID-R Data Sharing Working Group. Consultation and research were conducted to understand how the Roadmap's recommendations are currently being implemented, funders' future intentions for implementation, and how action can better align with researchers' evolving needs. This work included:

- A mapping review of funders' current policies and practices, against the Roadmap's recommendations to understand the current policy landscape and highlight best practices in implementation. Funders' policies and practices were mapped from publicly available sources, and validated by funders;
- A series of roundtable meetings, with 17 research funding organisations represented across the three meetings (list of organisations represented is in Acknowledgements). Here, findings from the mapping exercise were further contextualised and information on future ambitions for implementation was gathered. One of these roundtable meeting was co-convened with the CERCLE coalition, to gain the perspectives of researchers, particularly on building and sustaining capacity.

Section 3

Improved data sharing in a PHE by grantees of GloPID-R members

Action is needed to drive implementation across the Roadmap's Recommendations 1-3. This section presents barriers and enablers identified from our review and consultation to delivering on the roadmaps' theme of improving data sharing in a PHE by all grantees of GloPID-R members' programmes. Implementation actions are presented to support uniform adoption of best practice. Recommendations 1-3 refer to data broadly as non-personal data, noting further restrictions apply for the sharing of personal data, such as GDPR considerations (described in detail in SECTION 4).

RECOMMENDATION 1: IMPROVE FUNDER POLICIES. Rapid data sharing policies for PHEs have been identified as the most direct way in which funders can influence data sharing to accelerate public health benefits. Timeliness is of the greatest importance in PHEs, however this does need to be balanced against both quality and feasibility where researchers may have limited capacity due to the outbreak situation (see pages 7-9).

RECOMMENDATION 2. ALIGN TOOLS AND STRENGTHEN CAPACITY. Recommendation 1. sets necessary high standards for expectations on data sharing for GloPID-R grantees. Associated aligned tool improvement and capacity strengthening (for the whole research system) will be necessary to ensure that grantees can meet these standards and that they do not disadvantage researchers, particularly in LMICs (see pages 10-11).

RECOMMENDATION 3. BUILD TRUST. Trust has been identified as vital to data sharing in PHEs. It is hard to build trust during a PHE. Personal connections and effective governance systems have been shown to produce trust (see page 12).

Implementation actions for Recommendation 1 (a-d), Recommendation 2 (a-c) and Recommendation 3 (a-b):

Recommendation from the Roadmap

1a. Align policies for data sharing in PHEs to require sharing of quality-assured interim and final data in real time (wherever feasible).

Considerations, Challenges & Emerging Best Practices

Example wording is needed for policies

- ▶ There remains misalignment on policy wording and further guidance would be useful. Some funders have expressed a need for provision of preferred policy wording based on best practice to be provided, in order to incorporate this in their data-sharing policies. Policy wording should address the three following themes:
 - A time within which data must be shared
 - An audience with whom data must be shared
 - The type of data that must be shared

Implementation Actions

Action.

We propose the following policy wording to be included within relevant data-sharing policies:

*"In the case of a public health emergency, grantees must deposit **data and associated metadata** in a trusted repository applying the principle **as open as possible and as closed as necessary** and in line with the FAIR² and CARE³ principles. Data should be deposited as soon as its quality is appropriately assured, and **at most within one month of acquisition.**"*

Action by:

Funders

² Wilkinson MD, Dumontier M, Aalbersberg IJ, et al. The FAIR guiding principles for scientific data management and stewardship. Sci Data. 2016;3:160018. doi:10.1038/sdata.2016.18.

³ McLennan K, Hill R, Black L, et al. CARE principles for Indigenous data governance. Data Sci J. 2020;19:1-6. doi:10.5334/dsj-2020-024.

Section 3

Continued. Implementation actions for Recommendation 1 (a-d), Recommendation 2 (a-c) and Recommendation 3 (a-b):

Recommendation from the Roadmap

1.b. Where policies cannot be altered, align grant/contract conditions to require sharing of quality-assured interim and final data in real-time.

Considerations, Challenges & Emerging Best Practices

Example wording is needed for grant conditions

- Some funders have intentionally maintained policies as high-level, to mainstream open science across research. In such cases, data sharing requirements in PHE is better placed in grant conditions. Again, recommended text is needed to support uniform implementation.

Guidelines are needed to support researchers to adapt to changes in obligations

- High-level policies do, however, lead to greater ambiguity among grantees and more requests for clarification on data sharing during a PHE. For funders that wish to retain general, non-specific policies, separate guidance is needed to supplement grant conditions, to support grantees in understanding changes in obligations and put policy into practice. Due to the diversity of their funding portfolios, developing such guidance is difficult for individual funders to do. Given its focus, GloPID-R is well placed to develop guidance that is specific to outbreaks and which members can direct grantees toward.
- At a minimum, guidance should include:
 - Reference on community standards namely the FAIR² and CARE³ principles
 - Characteristics of trusted repositories in which to deposit data
 - Recommendations on what standards and norms should be applied
 - Recommendations on data access procedures, including establishing best practices for data access requests in a PHE
 - Recommendations on adopting the correct meta-data standards and use of persistent identifiers such as DOIs to ensure data visibility for secondary users
- During the pandemic, both CIHR and IDRC signposted already funded researchers and applicants for COVID-19 rapid response funding calls to tailored guidelines and recommendations. These guidelines were developed by the Research Data Alliance to support the research community on what practices to follow for data sharing during the pandemic, and to act as a blueprint for future emergencies ([available here ↗](#)). Directing applicants to the guidance, with a summary linked to the relevant funding call text, supported communication of and adherence to funders' expectations.

Implementation Actions

Action.

For grants associated with:

- Research funding calls launched in response to a PHE;
- Research funding calls for which research on the R&D Blueprint priority families is within scope;

We propose using the following policy wording in the funding call text:

*"In the case of a public health emergency, grantees must deposit **quality assured data and associated metadata** in a trusted repository applying the principle **as open as possible and as closed as necessary** and in line with the FAIR² and CARE³ principles. Data should be deposited as soon as its quality is appropriately assured, and **at most within one month of acquisition.**"*

Action by:

Funders

Section 3

Continued. Implementation actions for Recommendation 1 (a-d), Recommendation 2 (a-c) and Recommendation 3 (a-b):

Recommendation from the Roadmap

1c. Define appropriate thresholds for activation of rapid data sharing.

1d. Align funding policies to ensure that data sets and pre-publications are all included within the assessment of researcher outputs (in accordance with the San Francisco Declaration).

Considerations, Challenges & Emerging Best Practices

Trigger for a rapid response

- ▶ While funders' policies and grant conditions refer to PHEs as the trigger for data sharing, the definition and reference point for declaration of a PHE continues to vary across funders. This is a particularly important consideration for existing research relevant to a PHE, but funded through standard calls. Here, enhanced data sharing requirements due to a PHE may exceed anticipated costs for data management and sharing. Supplementary funding may need to be considered here.
- ▶ The use of the declaration of a PHEIC by the WHO as this trigger for rapid response was previously found to have been a bottleneck for data sharing, given that sharing of data may be required in advance and beyond the scope of a PHEIC. GloPID-R is well positioned to lead and establish a set of commonly agreed criteria and processes for when to trigger enhanced data sharing for a particular outbreak. From our review of funders' policies, Global Health EDCTP3 Joint Undertaking has the most absolute definition of a public health emergency, associated with its emergency contingency funding. As such, it is this definition that we propose among the GloPID-R membership.

Assessment of researcher outputs

- ▶ Monitoring compliance with data-sharing policies is resource-intensive, resulting in funders focusing on incentivising action rather than punishing inaction. In practical terms, increased weight needs to be given during grant review to researchers who demonstrate best practices in open data and data reproducibility during normal times, and during an outbreak.
- ▶ For relevant grants, assessment of previous data-sharing behaviour, particularly in the event of an outbreak, should be taken into account. Review panels require tailored guidance, particularly in relation to rapid response calls, in order to assess applicants' history of data sharing. Such incentives can encourage data-sharing practices and culture. To support this, unique and persistent identifiers for datasets are required by UKRI MRC to allow datasets to be reliably cited in funding applications.

Machine Actionable DMPs

- ▶ Improvements in the automation of monitoring compliance to Data Management Plans (DMPs) would be impactful. Machine actionable DMPs (maDMPs) increase the potential for automatic assessment of DMP content when monitoring implementation. MaDMPs can also be a useful tool in assessing the use of data-sharing repositories.
- ▶ The European Commission (EC) is actively exploring incorporating maDMPs into future funding cycles. For many funders this may not yet be achievable however. As an intermediary step, requiring grantees to use a suitable DMP tool to generate plans, such as the Data Stewardship Wizard⁴ or DMP Online⁵ could also improve tracking.

Implementation Actions

Action.

We recommend the following policy wording:

"A public health emergency such as a public health emergency of international concern (PHEIC) in accordance with the World Health Organisation or a public health emergency under applicable national frameworks and regulations."

Action by:

Funders

Action.

During grant application, require a narrative description of applicants' track record in data sharing.

Action by:

Funders

Action.

Provide reviewers with tailored guidance to assess applicants' history of data sharing

Action by:

Funders

Action.

Explore including machine actionable data management plans in relevant funding calls.

Action by:

Funders

⁴ Data Stewardship Wizard. [Internet]. [cited 2025 Mar 14]. Available from: <https://ds-wizard.org/>

⁵ DMP Online. [Internet]. [cited 2025 Mar 14]. Available from: <https://dmponline.dcc.ac.uk/>

Section 3

Continued. Implementation actions for Recommendation 1 (a-d), Recommendation 2 (a-c) and Recommendation 3 (a-b):

Recommendation from the Roadmap

2a. Align to improve guidance for Data Management Plans (DMP) in grant applications.

Considerations, Challenges & Emerging Best Practices	Implementation Actions
DMP principles ► Consistent principles for interoperability and consistent principles for interoperability across the memberships would support aligned guidance for DMPs. Appropriate costing for data management should be clearly demonstrated in guidance. DMPs can also extend beyond data, to other outputs such as sharing of software and code. A few funders require 'output management plans', in place of DMPs to broaden the concept of sharing to include software and code. ► Emerging principles collated across the guidance/review are demonstrated (Annex I). Existing guidance documents created by members, including referenced external resources, are available within the GloPID-R Repository of Resources (here).	Action. Align DMP requirements with the principles outlined in Annex I. Action by: Funders
Template DMP ► In an emergency context, the time required to prepare well-designed data management plans is a potential bottleneck. It is a clear advantage to use generic, readily available templates for DMPs. Providing templates and examples of DMPs from previously funded projects can support their generation. ► The variety of DMP templates provided by GloPID-R members is demonstrated in the GloPID-R Repository of Resources (here). Some funders have derived their template DMPs from Science Europe's 'Practical Guide to the International Alignment of Research Data Management, which aims to align DMPs across funding organisations, further information is available (here). ► In the Netherlands, ZonMW is developing standardised DMP templates based on FAIR practices and resources, and is supporting the transformation of these templates into a machine-actionable DMP-template that researchers can use.	Action. Provide applicants with templates for DMPs. Action by: Funders
Timing of Submission of DMPs ► Requiring DMPs at the point of grant application supports prospective planning for data management and sharing but is not uniform practice. Early consideration of data structure; curation to facilitate sharing and interoperability; and associated costs are needed particularly in the context of a PHE. For calls launched in response to an outbreak, DMPs ought to be a standard requirement. ► DMP submission time can differ in response to need; for instance, outside of an emergency, the EC requires DMPs six months after the grant is awarded whereas during an emergency, the EC requires a DMP at the point of application. Outside of an outbreak context, requiring DMPs later can be an effective means to support capacity development. EDCTP requires DMPs post-award and takes an active role in providing technical advice on DMP development and training to build in DMP development, particularly within new consortia.	Action. For research funding calls launched in response to an outbreak, include DMPs (with associated costs) as a component of review, with support and guidance for reviewers. Action by: Funders

Section 3

Continued. Implementation actions for Recommendation 1 (a-d), Recommendation 2 (a-c) and Recommendation 3 (a-b):

Recommendation from the Roadmap

2a. Align to improve guidance for Data Management Plans (DMP) in grant applications.

2b. Support the development and uptake of standardised tools and approaches to support international research collaborations & data sharing, including MOUs, MTAs & DTAs, data standards & data collection templates.

Considerations, Challenges & Emerging Best Practices	Implementation Actions
Recommending that grantees deposit data in established repositories ▶ Making data, metadata, provenance information and workflows available in established and certified repositories will increase how FAIR the data is. Funders can support grantees by suggesting appropriate repositories for data sharing. Where a subject repository doesn't exist, funders typically support the use of generalist repositories where these are appropriate (such as Zenodo⁶, Dryad⁷, FigShare⁸, Open Science Framework⁹ and DataVerse¹⁰). Institutional repositories should only be recommended as a last resort. The Swiss National Science Foundation provides a checklist to identify if repositories comply with FAIR Data Principles, with examples. ▶ Individual funders have attempted to define the criteria researchers should use to select a repository, as demonstrated in the GloPID-R Repository of Resources. In general, funders note that repositories should be trustworthy, subject to rigorous governance, and committed to the long-term preservation and sustained access of their data holdings. Creation of a list of trusted repositories by individual funders presents risks. Rather, GloPID-R has worked to consolidate a set of criteria as well as a non-exhaustive list for consideration by grantees.	Action. Refer relevant grantees to the GloPID-R list of repositories, accessible here. Action by: Funders
Alignment to harmonised protocols ▶ Funding call text can be used to promote the update of harmonised protocols. In its rapid response funding calls in response to the Mpx outbreak, CIHR used 'alignment to existing protocols, where appropriate' as a criterion for review, listed in the call text. This should be adopted by other funders to drive the update of standardised tools to enable interoperability. Similarly, in a call launched by the EC in response to the same Mpx outbreak, they required 'the use of harmonised protocols in collaboration with other actors, such as the WHO'. The funded consortium used the WHO's core protocol and despite not reaching recruitment targets has been able to aggregate data across trial platforms to produce actionable evidence, informing WHO guidelines. The EC is also funding CLuster Open Science Competence Centre (CLOCC)¹¹ virtual hubs providing expertise and best practice for Open Science.	Action. In rapid response funding calls, require that DMPs include how applicants will align with established research protocols. Action by: Funders

⁶ Zenodo. [Internet]. [cited 2025 Mar 14]. Available from: <https://zenodo.org/>

⁷ Dryad. [Internet]. [cited 2025 Mar 14]. Available from: <https://datadryad.org/>

⁸ Figshare. [Internet]. [cited 2025 Mar 14]. Available from: <https://figshare.com/>

⁹ Open Science Framework. [Internet]. [cited 2025 Mar 14]. Available from: <https://osf.io/>

¹⁰ DataVerse. [Internet]. [cited 2025 Mar 14]. Available from: <https://dataverse.org/>

¹¹ Cluster Open Science Competence Centre (CLOCC). [Internet]. [cited 2025 Mar 14]. Available from: <https://clocc.uni-halle.de/>

Section 3

Continued. Implementation actions for Recommendation 1 (a-d), Recommendation 2 (a-c) and Recommendation 3 (a-b):

Recommendation from the Roadmap

2c. Fund capacity strengthening in data management and analysis (linked to 3a to enable equity).

&

3a. Fund improved equitable, multi-disciplinary, multinational disease networks in advance of PHEs (linked to 2c. and 4a.) with real-time external data sharing requirements (aligned with 1.).

3b. Facilitate coordination between established research networks.

Considerations, Challenges & Emerging Best Practices	Implementation Actions
Funding Institutions in low-middle-income-countries ▶ Investing in local research institutes linked with national health research agencies enables sustainability and builds capacity to respond to an outbreak. Training in data management is often a common component of large grants, with little consideration on how to retain researchers once they have been trained. Here, allocating funding to institutions based in LMICs will enable institutions to retain staff through career development strategies. ▶ Where training does occur, translation into local languages and into different contexts is important. Further, the sustainability of i) the data itself and ii) the platforms that support the data such that they can be pivoted for multiple different uses and embedded within broader existing infrastructure should be carefully considered at grant review (rather than as a grant condition). This enables platforms to become sustainable by virtue of their utility to the wider ecosystem.	Action. Support data capacity building within institutions based in LMICs, linked with national health research agencies, as part of research network funding. Action by: Funders
Funding the secondary use of data ▶ Funding the secondary use of data, either through targeted funding calls or through clear guidance that secondary use of data is within the scope of a funding call, is a direct method to build capacity in data management and analysis and incentivize data sharing. Funding the secondary re-use of data can also be used to highlight challenges in capacity and enable targeted action to address barriers, such as tailored training modules. It is also important that funders encourage researchers to fully consider any scope for secondary use of data ahead of conducting new data collection. Encouraging researchers to build on knowledge that already exists can be done through requiring a systematic review as a preliminary step in research.	Action. Fund the secondary use of data Action by: Funders
Knowledge translation ▶ During an outbreak, funders can further facilitate data sharing by allocating resources to convening relevant grantees and policymakers. Convening researchers can be done ad-hoc as needed. EDCTP found that convening relevant researchers during COVID supported data-sharing and built trust across its funded researchers. The EC funds a more permanent knowledge-sharing platform, originally funded to facilitate dialogue among researchers and policy-makers. The Trial and the Cohort Coordination Boards brought together both EU-funded consortia and consortia funded by other funders. The Boards are now funded on a three-year project to maintain networks built for future outbreaks. Further information is available here ↗. Such platforms can also facilitate capacity building by enabling researchers to share experiences in managing and sharing data, as well as exploring best practices.	Action. Allocate resources to support knowledge mobilisation across funded networks and beyond. Action by: Funders

Section 4

Improve data sharing in PHEs by all stakeholders

This section presents barriers and enablers identified toward delivering on the roadmap's second area, improving data sharing in PHEs by all stakeholders, from our review and consultation. Implementation actions are presented to support uniform adoption of best practice.

RECOMMENDATION 4. INFLUENCE. Beyond their own individual and collaborative direct actions, the GloPID-R funders need to work as a group to further align with external stakeholders especially national and regional bodies in the affected areas which need to take the lead on research prioritisation and data sharing in PHEs in their locations.

Implementation actions for Recommendation 4 (a-b).

Recommendation from the Roadmap

4a. Collaborate within GloPID-R to align with and influence other stakeholders: national funders, Ministries of Health, Ministries of Science & Technology, commercial companies, publishers, university hierarchy, policy makers (especially WHO) & humanitarian sector.

Considerations, Challenges & Emerging Best Practices

Bridging the knowledge gap on norms and standards

- ▶ A lack of transparency on what the data sharing norms are across wider stakeholders presents a barrier to influence. Understanding obligations and practices of wider stakeholders is important and key to developing expectations around what those partnerships with wider stakeholders should look like and how funders can facilitate the sharing of data. Convening stakeholders would be a good preliminary step to understanding obligations better.
- ▶ Exerting influence over norms requires better understanding of the barriers and the processes for data sharing. These will vary greatly across groups of organisations, and different obligations will apply. To develop implementable solutions, improving the understanding of these contextual factors will be important to co-develop strategies for influence.
- ▶ During a public health emergency, data sharing activities must comply fully with all relevant legal requirements at national and international levels. In the European Economic Area, the General Data Protection Regulation (GDPR) regulates the processing of personal data, including in the context of health research. Under GDPR, whilst anonymised data does not fall within its scope, pseudonymised data is considered personal data. Under GDPR researchers must process personal data in a lawful, fair and transparent manner, and comply with the data minimisation and storage limitation principles. Processing of health data (including genetic data) and transfer of data outside of the EU is subject to further requirements. The GDPR provides the scope for the application of several potential derogations in the event of an emergency, but uncertainty over their application and differing implementations of GDPR provisions in national laws across EU member states has the potential to inhibit data sharing particularly in the context of international research collaborations.

Implementation Actions

Action.

GloPID-R should support convening of representatives from different stakeholder groups to understand differing regional and national obligations and practices, and co-develop strategies for wider influence.

Action by:

GloPID-R

Section 4

Continued. Implementation actions for Recommendation 4 (a-b).

4b. Communicate the Public Health benefits of data sharing. Continue to publish and advocate for the benefits.

Considerations, Challenges & Emerging Best Practices	Implementation Actions
There is a critical need for funders to work collectively to engage policymakers to ensure there is clear guidance at national and international levels on the legal framework and the legal basis for data sharing that applies during a future public health emergency, using the lessons learned from the COVID-19 pandemic. Exploring broader tools of influence ▶ The Wellcome Statement on Data Sharing is a particularly good example of a piece of policy work with wide ranging influence across a number of stakeholders. The statement represented a culture shift and a good illustration of the broader community reaching consensus on open science principles. GloPID-R can learn from this example to influence the broader community for example through a consensus statement with signatories.	
Best practice examples ▶ Decisions to share data often lie within local governments, with stagnated processes around data sharing and a lack of training. Here, funders may have leverage with their strong convening power to support and drive policy changes. Strong use-cases can also reduce this barrier by demonstrating to ministries the benefit of data sharing.	Action. GloPID-R should develop use-cases to demonstrate the impact of data sharing during a PHE and influence change. Action by: GloPID-R

Section 5

Foster a culture and create an infrastructure where data sharing is an integral part of research

This section presents barriers and enablers identified toward delivering on the roadmap's theme of fostering a culture and creating an infrastructure where data sharing is an integral part of research from our review and consultation. Implementation actions are presented to support uniform adoption of best practice

RECOMMENDATION 5. STRENGTHEN SYSTEMS. There is a need for systems for data sharing which researchers trust, without needing pre-established trust through known collaborators (linked to 3.).

Implementation actions for Recommendation 5 (a-b)

Recommendation in Roadmap

5a. Support existing and expanded data-sharing platforms for priority pathogens with agreed governance mechanisms and data security systems.

5b. Support an overarching unified governance structure for international data sharing within which existing platforms can be embedded and through which platforms for novel pathogens can be developed.

Considerations, Challenges & Emerging Best Practices

Funding Data Access Committees (DAC)

- ▶ DACs significantly enable data-sharing as they elicit trust; however, the process is resource-intensive (hence only feasible for larger, established groups) and relies on data access agreements. Data access agreements require contract expertise from both parties, often lacking within less-resourced institutions and taking significant time to gain input. Paid time for i) DAC coordinators, ii) contract expertise, and iii) preparing datasets for sharing is important to enable DACs to function. Consolidating DACs and the use of existing committees should be encouraged, where appropriate.
- ▶ Review of DMP guidelines across the membership found only three funders required applicants to consider if Data Access Committees are needed and what their composition should be. The interaction between DACs and ethics committees is also an important consideration. The Expert Advisory Group on Data Access, established by the Wellcome Trust, Cancer Research UK, the Economic and Social Research Council, and the Medical Research Council, set out key principles for data access and governance mechanisms in 2015 ([available here](#) ↗).

Developing and sustaining data sharing platforms

- ▶ Maximising the value of the data in preparing for and responding to public health emergencies depends critically upon building and maintaining a robust and coordinated international infrastructure of data repositories and platforms. The component data resources within this ecosystem serve to preserve data safely and securely, standardise and curate data and metadata to enable interoperability and re-use, and make those data accessible to researchers from anywhere in the world under appropriate governance conditions. They also provide essential tools and services to help researchers discover, combine and interpret data to generate new insights.
- ▶ At present, funding for the development and maintenance of this data infrastructure is fragmented and uncoordinated at a global level. Well-established data repositories exist for many key data types and organisms, but these often lack secure long-term funding, and are reliant on short-term grant support, often from a single or limited pool of funders. For other data types, databases and tools are less well-developed.
- ▶ There is an urgent need for funders to cooperate to develop and sustain this infrastructure in a coordinated manner. Funding through a coordinated funding mechanism, such as the GloPID-R coordinated funding mechanism to strengthen global pandemic preparedness, Global Research Improving Pandemic Preparedness (GRIPP) can support sustainability.

Implementation Actions

Action.

Support consideration of DACs and allow for associated costs.

Action by:

Funders

Action.

Work to develop cooperative and coordinated funding approaches to build, strengthen and sustain a global network of data platforms and repositories for priority pathogens.

Action by:

GloPID-R

Section 6

Overview and timing of the recommended actions within the funding life cycle.

ACTIONS FOR RESPONSE FUNDING CALLS

Actions for grant conditions (to be highlighted in funding call text)

We propose the following policy wording to be included within relevant data-sharing policies:

"In the case of a public health emergency, grantees must deposit data and associated metadata in a trusted repository applying the principle as open as possible and as closed as necessary and in line with the FAIR and CARE principles. Data should be deposited as soon as its quality is appropriately assured, and at most within one month of acquisition"

Require within applications

- Data Management Plans (DMP) with associated costs and alignment with established protocols
- A narrative description of the applicant's track record in data sharing

Provide applicants with:

- DMP Templates

Actions for grant assessment

Criterion for review:

- DMPs
- Previous data sharing activities
- Detail on how they will align to established research protocols

Support reviewers with guidance on:

- How to assess an applicants' history of data sharing
- Reviewing DMPs

Actions for post-award

- Allocate resources to further strengthening DMPs as required
- Allocate resources to support knowledge mobilisation across funded networks and beyond
- Refer grantees to the GloPID-R list of trusted repositories for consideration

ACTIONS OUTSIDE OF AN OUTBREAK CONTEXT

Funders:

- Explore including machine actionable data management plans in relevant funding calls.
- Align DMPs with the GloPID-R DMP principles
- Allocate resources to support knowledge mobilisation across funded networks and beyond
- Fund the secondary use of data
- Support consideration of data access committees by their inclusion in DMPs and allow for associated costings

GloPID-R:

- Develop exceptional use-cases to demonstrate the impact of data during a PHE and influence change
- Support the convening of representatives from different stakeholder groups to understand different obligations and co-develop strategies for wider influence
- Work to develop cooperative and coordinated funding approaches to build, strengthen and sustain a global network of data platforms and repositories for priority pathogens.

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AMED; ANRS; Bill & Melinda Gates Foundation; Canadian Institutes of Health Research; DLR-PT; EDCTP Joint Global Health Undertaking; European Commission; International Development Research Centre; KRIBB; Pasteur Network; South African Medical Research Council; UK Department of Health and Social Care; UK Medical Research Council; UK National Institutes of Health Research; Wellcome Trust; WHO, TDR; and ZonMW.



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Principles for Data Management Plans

FAIR

DMPs should align with the FAIR principles, including details on how data will be findable (considering what identifiers will be used, and provisions for meta-data); accessible (considering what repositories will be used, data access committee considerations, metadata); interoperable (data and metadata vocabularies, standards and formats for interoperability) and reusable (considering licence terms, data provenance and community metadata standards).

Living

DMPs should be living documents which researchers update on an ongoing basis as their research develops and data outputs emerge. Whether submitted at the proposal stage or as a deliverable, their refinement should not stop there. It should first be considered a helpful tool for researchers before a deliverable for funders. Within the next funding program of the European Commission, maDMPs are being considered to connect to reporting and assessment. This would reduce the burden on both funders and researchers. For EDCTP, DMPs are considered 'living documents' and are expected to be updated regularly

Well-resourced

Most funders require applicants to detail the allocation of resources required to deliver on objectives within the DMP, and include allowable costs as part of funding proposals. This includes; personnel (for instance, ZonMW mandates the nomination of a data steward within data management plans to ensure projects include the necessary expertise); data storage costs; and reasonable costs of operating an access committee. Where no repositories are suitable, DMPs must also outline costs for curation and maintenance of data.

Comprehensive

DMPs should ideally cover all outputs created and collected through the grant, including data sets, original software, intellectual property and new materials. Framing DMPs as an 'outputs management plan' also helps to broaden researchers' considerations of what DMPs ought to include.

Open

DMPs should also be made publicly available, wherever possible, to hold researchers accountable and further drive implementation. For EDCTP, DMPs are required to be openly available.

Data Re-Use

DMPs should require grantees to consider how data will be made available to permit the widest reuse possible. The TDR's approach to data management plans (DMPs) is unique. Instead of focusing on 'how will your data be shared', TDR frames the question as 'how will your data be used by the broadest communities'. This approach, encourages grantees to consider the broader impact of their data. TDR also supports the funding of secondary re-use of data, which is a significant way to further incentivize data sharing.

Equitable, Ethical, & Secure

DMPs should include consideration toward any ethical or legal issues that could impact data sharing. Where data relates to individual, proportionate data governance processes are needed which safeguard privacy whilst enabling safe and secure access. Equally, DMPs need to recognise data sovereignty issues where appropriate.



<https://www.glopid-r.org/>
<https://www.glopid-r.org/our-work/data-sharing/>