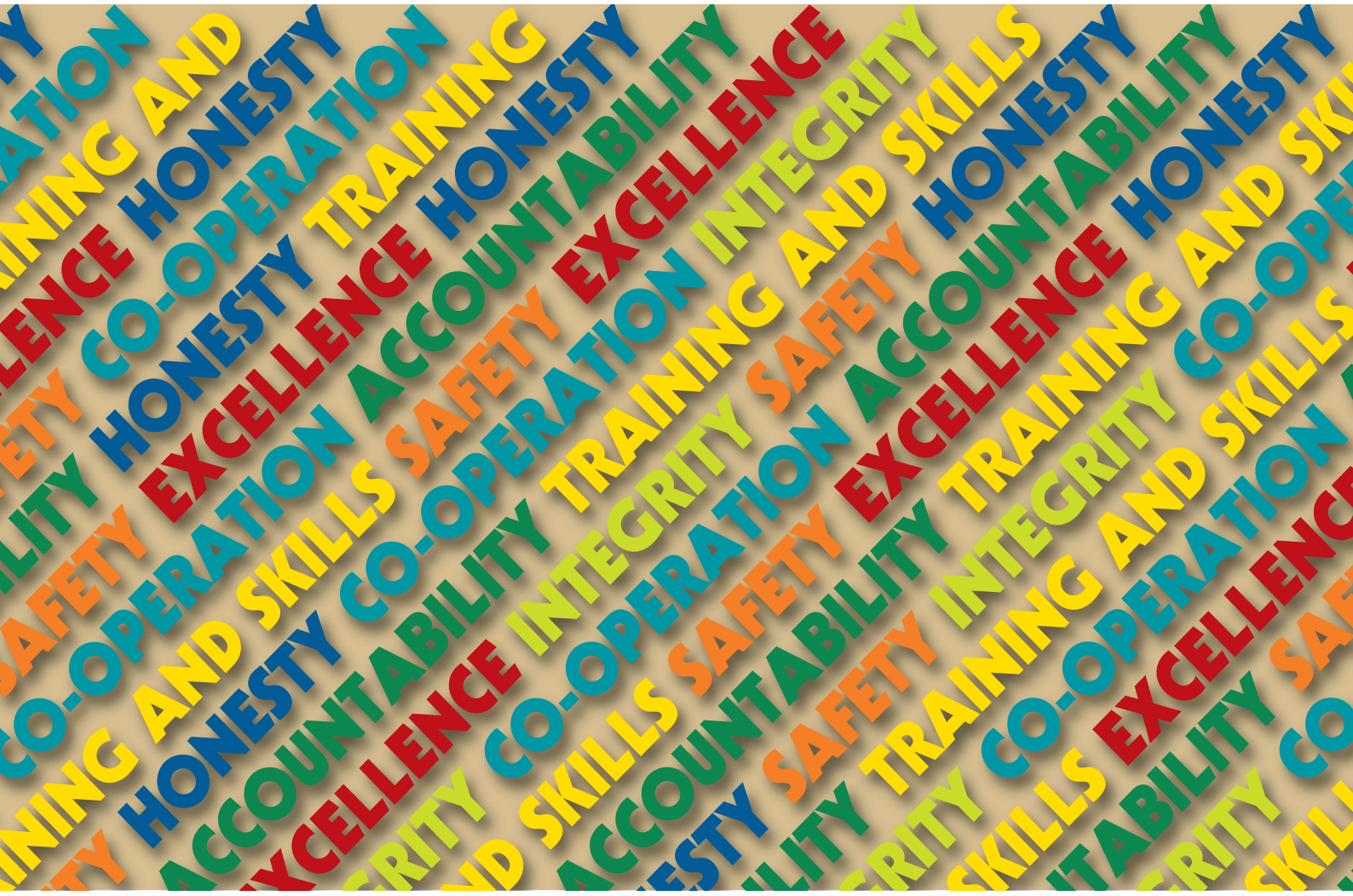
CODE OF PRACTICE FOR RESEARCH

Promoting good practice and preventing misconduct

September 2009



UK Research Integrity Office

Recommended checklist for researchers

The Checklist lists the key points of good practice in research for a research project and is applicable to all subject areas. More detailed guidance can be found in section 3. A PDF version is available from www.ukrio.org

Before conducting your research, and bearing in mind that, subject to legal and ethical requirements, roles and contributions may change during the time span of the research:

1. Does the proposed research address pertinent question(s) and is it designed either to add to existing knowledge about the subject in question or to develop methods for research into it?
2. Is your research design appropriate for the question(s) being asked?
3. Will you have access to all necessary skills and resources to conduct the research?
4. Have you conducted a risk assessment to determine:
   - a whether there are any ethical issues and whether ethics review is required;
   - b the potential for risks to the organisation, the research, or the health, safety and well-being of researchers and research participants; and
   - c what legal requirements govern the research?
5. Will your research comply with all legal and ethical requirements and other applicable guidelines, including those from other organisations and/or countries if relevant?
6. Will your research comply with all requirements of legislation and good practice relating to health and safety?
7. Has your research undergone any necessary ethics review (see 4(a) above), especially if it involves animals, human participants, human material or personal data?
8. Will your research comply with any monitoring and audit requirements?
9. Are you in compliance with any contracts and financial guidelines relating to the project?
10. Have you reached an agreement relating to intellectual property, publication and authorship?
11. Have you reached an agreement relating to collaborative working, if applicable?
12. Have you agreed the roles of researchers and responsibilities for management and supervision?
13. Have all conflicts of interest relating to your research been identified, declared and addressed?
14. Are you aware of the guidance from all applicable organisations on misconduct in research?

When conducting your research:

1. Are you following the agreed research design for the project?
2. Have any changes to the agreed research design been reviewed and approved if applicable?
3. Are you following best practice for the collection, storage and management of data?
4. Are agreed roles and responsibilities for management and supervision being fulfilled?
5. Is your research complying with any monitoring and audit requirements?

When finishing your research:

1. Will your research and its findings be reported accurately, honestly and within a reasonable time frame?
2. Will all contributions to the research be acknowledged?
3. Are agreements relating to intellectual property, publication and authorship being complied with?
4. Will research data be retained in a secure and accessible form and for the required duration?
5. Will your research comply with all legal, ethical and contractual requirements?

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This publication can be downloaded in pdf format from the UK Research Integrity Office website www.ukrio.org and readers and users of the Code of Practice are recommended to check there for updates.

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1 Introduction

1.1 The UK Research Integrity Office's Code of Practice for Research has been designed to encourage good conduct in research and help prevent misconduct, in order to assist organisations and researchers to conduct research of the highest quality. It provides general principles and standards for good practice in research, applicable to both individual researchers and to organisations that carry out, fund, host or are otherwise involved in research.

1.2 The Code is applicable to all subject areas and does not attempt to micro-manage research. Recognising that many forms of guidance already exist, the intention is that research organisations may use the principles and standards outlined in this Code as benchmarks when drafting or revising their own, more detailed, codes of practice. No single publication can expect to cover the nuances of all types of research in all disciplines; therefore, the Code should not be seen as prescriptive but as a set of guiding principles and standards to inform the management and conduct of research.

1.3 The Code covers areas of good practice in research typically included in organisational policies for the conduct of research, drawing upon existing good practice and the experiences of the UK Research Integrity Office (UKRIO) in addressing good conduct and misconduct in research. Detailed guidance is given on core standards for good practice in research but particular attention has been paid to areas where UKRIO has most often been approached for guidance, in the hope of passing on lessons learned to the research community.

1.4 The Code complements existing and forthcoming guidance on research conduct, such as that provided by Research Councils UK, the Wellcome Trust or the Council for Science and Technology. Similarly, the Code complements organisational policies, such as those for health and safety, raising concerns at work, or management of finances or of intellectual property, and does not seek to replace them. Use of the benchmarks contained in this Code can assist research organisations in fulfilling the requirements of regulatory, funding and other relevant bodies, and ensure that important issues have not been overlooked.

1.5 UKRIO recognises that there are many organisations which issue guidance on the conduct of research to the UK research community. For some time, UKRIO has been working with organisations such as Research Councils UK and the Department of Health, with a view ultimately to streamline guidance on good practice in research, to ensure clarity for the research community and avoid duplication of effort.

1.6 The Code is organised in the following Sections:

a) Section 2 contains broad Principles which define the responsibilities and values in the conduct of research by both researchers and research organisations.

b) A one-page Recommended Checklist for Researchers can be found on the inside of the front cover. This is a non-technical checklist summarising the key points of good practice in research and is applicable to all subject areas. The Checklist is based on the more detailed Standards given in section 3.

c) Section 3 lists Standards for good practice in research that researchers and research organisations should comply with. The Standards apply to all disciplines of research but organisations may wish to expand upon them by offering more detailed guidance for certain subject areas or types of research.

1.7 The Code does not stipulate how to put the promotion and support of good research practice into operation as it is quite rightly left up to organisations and researchers to determine the best way to do so in their particular research environment. It should be noted, however, that only through the endorsement and support of good practice in research at the highest level and implementation through education, training and supervision, can researchers become aware of their individual responsibilities and the collective responsibility they have to their research organisation and the wider research community.

1.8 Note that, for the purposes of this Code, "research" refers to the definition used by the Research Assessment Exercise (Research Assessment Exercise 2008, p. 34):

a) "'Research'... is to be understood as original investigation undertaken in order to gain knowledge and understanding. It includes work of direct relevance to the needs of commerce, industry, and to the public and voluntary sectors; scholarship*; the invention and generation of ideas, images, performances, artefacts including design, where these lead to new or substantially improved insights; and the use of existing knowledge in experimental development to produce new or substantially improved materials, devices, products and processes, including design and construction. It excludes routine testing and routine analysis of materials, components and processes such as for the maintenance of national standards, as distinct from the development of new analytical techniques. It also excludes the development of teaching materials that do not embody original research."

b) "* Scholarship... is defined as the creation, development and maintenance of the intellectual infrastructure of subjects and disciplines, in forms such as dictionaries, scholarly editions, catalogues and contributions to major research databases."

1.9 Similarly, for the purposes of this Code, "organisations" refers to any bodies which: conduct, host, sponsor or fund research; employ, support or host researchers; teach research students; or allow research to be carried out under their auspices. "Researchers" refers to any person who conducts research, including but not limited to: as an employee; an independent contractor or consultant; a research student; a visiting or emeritus member of staff; or a member of staff on a joint clinical or honorary contract.

1.10 Some organisations may wish the Code to apply to undergraduate students; if so, this should be made clear in institutional policies and organisations should consider what particular education, training, supervision and support they should provide to student researchers. They should make it clear to student researchers that their research must comply with the organisation's policies and procedures for the conduct of research.

1.11 Sources used in the development of the Code are acknowledged in the appendix. UKRIO would also like to thank the individuals and institutions who responded to the public consultation on a draft version of the publication in 2009 for their contributions to the Code.

1.12 Footnote to the first edition

a) It is the intention of UKRIO that the Code will be reviewed regularly, initially on an annual basis. UKRIO welcomes feedback from organisations and researchers on the current edition, to inform the review.

b) To that end, the Code will be published as an online document on the UKRIO website (www.UKRIO.org), as well as hard copy and PDF versions. This online Code will include a mechanism for the research community to submit feedback on specific sections and suggest new developments in good practice in research for inclusion.

c) Organisations and researchers are recommended to check the UKRIO website for the annual updates to the Code. The website also provides information on how to contact UKRIO to gain access to independent, confidential and expert advice and guidance on any issues relating to good practice and misconduct in research.

2 Principles

2.0.1 Organisations and researchers should adhere to the following Principles, which set out the responsibilities and values relevant to research. While some elements may seem self-evident, and there is some overlap, these Principles aim to encourage all involved in research to consider the wider consequences of their work and to engage critically with the practical, ethical and intellectual challenges that are inherent in the conduct of high quality research, rather than treating codes of practice such as this as just another procedure to be followed.

2.0.2 Organisations and researchers should be guided by these Principles when implementing and complying with the core Standards described in section 3 and the *Recommended Checklist for Researchers* on the inside of the front cover.

2.1 EXCELLENCE: *organisations and researchers* should strive for excellence when conducting research and aim to produce and disseminate work of the highest quality. This Code, its Principles and its Standards are intended to support these goals.

2.2 HONESTY: *organisations* should work to create and maintain a culture of research that fosters and supports honesty in research. *Researchers* should be honest in relation to their own research and that of others. They should do their utmost to ensure the accuracy of data and results, acknowledge the contributions of others, and neither engage in misconduct nor conceal it.

2.3 INTEGRITY: *organisations and researchers* must comply with all legal and ethical requirements relevant to their field of study. They should declare any potential or actual conflicts of interest relating to research and where necessary take steps to resolve them.

2.4 CO-OPERATION: *organisations and researchers* should promote the open exchange of ideas, research methods, data and results and their discussion, scrutiny and debate, subject to any considerations of confidentiality.

2.5 ACCOUNTABILITY: *organisations and researchers* should recognise that in and through their work they are ultimately accountable to the general public and should act accordingly. They should ensure that any research undertaken complies with any agreements, terms and conditions relating to the project, and allows for proper governance and transparency. *Researchers* should follow the requirements and guidance of any professional bodies in their field of research. Researchers who are members of a regulated profession must follow the requirements and guidance of the body regulating their profession.

2.6 TRAINING AND SKILLS: *organisations* should provide training and opportunities for development for their researchers, and the necessary resources to enable them to conduct research to the required standards. They should support researchers in identifying unmet needs for training and development. *Researchers* should ensure that they have the necessary skills, training and resources to carry out research, in the proposed research team or through collaboration with specialists in relevant fields, and report and resolve any unmet needs identified.

2.7 SAFETY: *organisations and researchers* should ensure the dignity, rights, safety and well-being of all involved in research and avoid unreasonable risk or harm to research subjects, patients, participants, researchers and others. They should report and address any concerns relating to the dignity, rights, safety and well-being of those involved in research. Research should be initiated and continued only if the anticipated benefits justify the risks involved.

3

Standards for organisations and researchers

3.0.1 Organisations and researchers should comply with the following core Standards, which should be interpreted in light of the Principles in section 2. Each Standard adopts the order:

a) organisations and researchers;
b) organisations; and
c) researchers.

3.1 General guidance on good practice in research

3.1.1 *Organisations and researchers* must comply with all legal and ethical requirements and other guidelines that apply to their research. This includes submitting research proposals for ethics review where appropriate and abiding by the outcome of that review. They should also ensure that research projects are approved by all applicable bodies, ethical, regulatory or otherwise.

3.1.2 When conducting, or collaborating in, research in other countries, organisations and researchers based in the UK should comply with the legal and ethical requirements existing in the UK and in the countries where the research is conducted. Similarly, organisations and researchers based abroad who participate in UK-hosted research projects should comply with the legal and ethical requirements existing in the UK as well as those of their own country.

3.1.3 Organisations and researchers should ensure that all research projects have sufficient arrangements for insurance and indemnity prior to the research being conducted.

3.1.4 *Organisations* should:

a) ensure that good practice in research forms an integral part of their research strategy or policy;

b) establish clear policies and procedures that cover the Principles of good practice in research (see section 2) and offer detailed guidance on the Standards set out in this Code;

c) ensure that these policies and procedures complement and are in accordance with existing organisational policies, such as those for health and safety, raising concerns at work, management of finances or of intellectual property, and equality and diversity;

d) make sure that their researchers are aware of these policies and procedures and that all research carried out under the auspices of the organisation complies with them;

e) provide training, resources and support to their researchers to ensure that they are aware of these policies and procedures and are able to comply with them;

f) encourage their researchers to consider good practice in research as a routine part of their work; and

g) monitor these measures for suitability and effectiveness and review them where necessary.

3.1.5 *Researchers* should:

a) recognise their responsibility to conduct research of high ethical standards;

b) be aware of their organisation's policies and procedures on good practice in research;

c) make sure that their research complies with these policies and procedures, and seek guidance from their organisation when necessary;

d) work with their organisation to ensure that they have the necessary training, resources and support to carry out their research; and

e) suggest to their organisation how guidance on good practice in research might be developed or revised.

3.2 Leadership and supervision

3.2.1 *Organisations and researchers* should promote and maintain an environment which fosters and supports research of high ethical standards, mutual co-operation, professionalism and the open and honest exchange of ideas. They should foster a culture where good conduct in research is promoted and inappropriate conduct is identified and addressed.

3.2.2 *Organisations* should provide direction and supervision of research and researchers, setting out clear lines of accountability for the organisation and management of research. They should support supervisors and researchers in meeting the legal and ethical requirements of conducting research. Organisations should encourage the career development of their researchers and provide training and mentoring of new researchers. They should also offer training and support to those charged with the supervision and development of other researchers. Organisations should support the principles of the *Concordat to Support the Career Development of Researchers*.

3.2.3 *Researchers* involved in the supervision and development of other researchers should be aware of their responsibilities and ensure that they have the necessary training, time and resources to carry out that role, and request support if required.

3.3 Training and mentoring

3.3.1 *Organisations* should provide training for researchers to enable them to carry out their duties and develop their knowledge and skills throughout their career. This should include training in the responsible design, conduct and dissemination of research. They should support researchers in identifying unmet needs for training and development. Organisations should provide qualified mentors to assist in the training and career development of new researchers and also provide career development and educational opportunities for researchers who are more established in their careers. As in 3.2.2, they

should support the principles of the *Concordat to Support the Career Development of Researchers*.

3.3.2 Organisations should provide particular support for student researchers. They should make sure that student researchers understand which standards and organisational policies and procedures they are expected to comply with.

3.3.3 *Researchers* should undergo training in order to carry out their duties and to develop their knowledge and skills throughout their career, repeating training where necessary to ensure that skills are kept up-to-date. They should identify needs for training when they arise and report them to their manager or other appropriate person as identified by their organisation. See also section 3.2.3.

3.4 Research design

3.4.1 When designing research projects, *organisations and researchers* should ensure that:

a) the proposed research addresses pertinent question(s) and is designed either to add to existing knowledge about the subject in question or to develop methods for research into it;

b) the design of the study is appropriate for the question(s) being asked and addresses the most important potential sources of bias;

c) the design and conduct of the study, including how data will be gathered, analysed and managed, are set out in detail in a pre-specified research plan or protocol;

d) all necessary skills and experience will be available to carry out the proposed research, in the proposed research team or through collaboration with specialists in relevant fields;

e) sufficient resources will be available to carry out the proposed research and that these resources meet all relevant standards; and

f) any issues relating to the above are resolved as far as possible prior to the start of the research.

3.4.2 Organisations (where appropriate) and researchers should conduct a risk assessment of the planned study to determine:

a) whether there are any ethical issues and whether ethics review is required;

b) the potential for risks to the organisation, the research, or the health, safety and well-being of researchers and research participants; and

c) what legal requirements govern the research.

3.4.3 Where the design of a study has been approved by ethics, regulatory or peer review, organisations and researchers should ensure that any subsequent alterations to the design are subject to appropriate review to determine that they will not compromise the integrity of the research or any terms of consent previously given.

3.4.4 *Organisations* should set up systems to ensure that when there are risks that proposed research or its results may be misused for purposes that are illegal or harmful, those risks

are identified and addressed. They should make these systems known to researchers and provide guidance and support to researchers on projects where such risks are identified.

3.4.5 *Researchers* should try to anticipate any risks that the proposed research might produce results that could be misused for purposes that are illegal or harmful. Researchers should report any risks to, and seek guidance from, the appropriate person(s) in their organisation and take action to minimise those risks.

3.4.6 Researchers should be prepared to make research designs available to peer reviewers and journal editors when submitting research reports for publication.

3.5 Collaborative working

3.5.1 *Organisations and researchers* should pay particular attention to projects which include participants from different countries or where work will be carried out in another country due to the additional legal and ethical requirements and other guidelines that may apply. See also sections 3.1.2, 3.7.2 and 3.8.2 .

3.5.2 *Organisations* should work with partner organisations to ensure the agreement of, and compliance with, common standards and procedures for the conduct of collaborative research, including the resolution of any issues or problems that might arise and the investigation of any allegations of misconduct in research if they occur.

3.5.3 *Researchers* should be aware of the standards and procedures for the conduct of research followed by any organisations involved in collaborative research that they are undertaking. They should also be aware of any contractual requirements involving partner organisations, seeking guidance and assistance where necessary and reporting any concerns or irregularities to the appropriate person(s) as soon as they become aware of them.

3.5.4 Researchers should try to anticipate any issues that might arise as a result of working collaboratively and agree jointly in advance how they might be addressed, communicating any decisions to all members of the research team. In particular, agreement should be sought on the specific roles of the researchers involved in the project and on issues relating to intellectual property, publication, and the attribution of authorship, recognising that, subject to legal and ethical requirements, roles and contributions may change during the time span of the research.

3.6 Conflicts of interest

3.6.1 *Organisations and researchers* must recognise that conflicts of interest (i.e. personal or institutional considerations, including but not limited to financial matters) can inappropriately affect research. Conflicts of interest must be identified, declared and addressed in order to avoid poor practice in research or potential misconduct.

3.6.2 When addressing a conflict of interest, it must be decided whether it is of a type and severity that poses a risk of fatally compromising the validity or integrity of the research, in which case researchers and organisations should not proceed with the research, or whether it can be adequately addressed through declarations and/or special safeguards relating to the conduct and reporting of the research.

3.6.3 *Organisations* should have a clearly-written and accessible policy for addressing conflicts of interest, including guidance for researchers on how to identify, declare and address conflicts of interest, and should disseminate and explain the policy to researchers. Organisations should ensure that researchers understand the importance of recognising, disclosing and addressing conflicts of interest in the conduct and reporting of research.

3.6.4 Organisations should comply with the requirements of their policy for addressing conflicts of interest, as well as any external requirements relating to conflicts of interest, such as those of funding bodies. Heads of organisations and other senior staff should be aware of potential or actual conflicts of interest at the institutional level and disclose them when they arise so that they can be addressed.

3.6.5 *Researchers* should comply with their organisation's policy for addressing conflicts of interest, as well as any external requirements relating to conflicts of interest, such as those of funding bodies. This should include declaring any potential or actual conflicts of interest relating to their research to: their manager or other appropriate person as identified by their organisation; any ethics committee which reviews their research; and when reporting their findings at meetings or in publications. Conflicts of interest should be disclosed as soon as researchers become aware of them.

3.6.6 Researchers should agree to abide by any direction given by their organisation or any relevant ethics committee in relation to a conflict of interest.

3.7 Research involving human participants, human material or personal data

3.7.1 *Organisations and researchers* should make sure that any research involving human participants, human material or personal data complies with all legal and ethical requirements and other applicable guidelines. Appropriate care should be taken when research projects involve: vulnerable groups, such as the very old, children or those with mental illness; and covert studies or other forms of research which do not involve full disclosure to participants. The dignity, rights, safety and well-being of participants must be the primary consideration in any research study. Research should be initiated and continued only if the anticipated benefits justify the risks involved.

3.7.2 When conducting, or collaborating in, research in other countries, organisations and researchers based in the UK should comply with the legal and ethical requirements existing in the UK and in the countries where the research is conducted. Similarly, organisations and researchers based abroad who participate in UK-hosted research projects should comply with the legal and ethical requirements existing in the UK as well as those of their own country.

3.7.3 Organisations and researchers should ensure the confidentiality and security of: personal data relating to human participants in research; and human material involved in research projects.

3.7.4 Organisations and researchers working with, for, or under the auspices of, any of the UK Departments of Health and/or the National Health Service must adhere to all relevant guidelines, for example the Department of Health's *Research Governance Framework for Health and Social Care* and the National Research Ethics Service's *Guidance for Applicants*.

Organisations and researchers involved in clinical trials on medicinal products for human use should comply with the principles of Good Clinical (Research) Practice.

3.7.5 *Organisations* should set up systems to ensure appropriate ethical, regulatory and peer review of research projects involving human participants, human material or personal data. The systems should include mechanisms to ensure that such research projects have been approved by all applicable bodies, ethical, regulatory or otherwise.

3.7.6 Organisations should also set up systems to ensure that appropriate procedures for obtaining informed consent are established and observed in projects involving human participants, having particular regard to the needs and capacity of the subjects involved.

3.7.7 Organisations should set up systems to ensure the confidentiality and security of: personal data relating to human participants in research; and human material involved in research projects.

3.7.8 Organisations should make sure that their researchers are aware of all of the above systems and have access to all relevant guidance and legal and ethical frameworks.

3.7.9 *Researchers* should submit research projects involving human participants, human material or personal data for review by all relevant ethics committees and abide by the outcome of those reviews. They should also ensure that such research projects have been approved by all applicable bodies, ethical, regulatory or otherwise.

3.7.10 Researchers on projects involving human subjects must satisfy themselves that participants are enabled, by the provision of adequate accurate information in an appropriate form through suitable procedures, to give informed consent, having particular regard to the needs and capacities of vulnerable groups, such as the very old, children and those with mental illness.

3.7.11 Researchers should inform research participants that data gathered during the course of research may be disseminated not only in a report but also in different forms for academic or other subsequent publications and meetings, albeit not in an identifiable form, unless previously agreed to, and subject to limitations imposed by legislation or any applicable bodies, ethical, regulatory or otherwise.

3.7.12 Researchers who are members of a regulated profession must ensure that research involving human participants, human material or personal data complies with any standards set by the body regulating their profession.

3.7.13 Researchers have a duty to publish the findings of all clinical research involving human participants. In addition, it is government policy to promote public access to information about any research and research findings affecting health and social care, including the principle that trials should appear on public registers. In this context "trials" means all comparative studies of health interventions, not just ones conducted in a clinical setting.

3.7.14 If researchers consider that human participants in research are subject to unreasonable risk or harm, they must report their concerns to their manager, or other appropriate person as identified by their organisation, and, where required, to the appropriate regulatory authority. Similarly, concerns relating to the improper and/or unlicensed use or storage of human material, or the improper use or storage of personal data, should be reported.

3.8 Research involving animals

3.8.1 *Organisations and researchers* should make sure that research involving animals adheres to all legal and ethical requirements and other applicable guidelines. They should consider the opportunities for reduction, replacement and refinement of involving animals in research projects and should refer to the relevant guidance.

3.8.2 When conducting, or collaborating in, research in other countries, organisations and researchers based in the UK should comply with the legal and ethical requirements existing in the UK and in the countries where the research is conducted. Similarly, organisations and researchers based abroad who participate in UK-hosted research projects should comply with the legal and ethical requirements existing in the UK as well as those of their own country.

3.8.3 *Organisations* should set up systems to ensure the ethical, regulatory and peer review of research projects involving animals. The systems should include mechanisms to make sure that such research projects have been approved by all applicable bodies, ethical, regulatory or otherwise.

3.8.4 Organisations should make sure that their researchers are aware of the above systems and have access to all relevant guidance and legal and ethical frameworks.

3.8.5 *Researchers* should submit research projects involving animals for review by all relevant ethics committees and abide by the outcome of that review. They should also ensure that such research projects have been approved by all applicable bodies, ethical, regulatory or otherwise.

3.8.6 If researchers consider that animals involved in research are subject to unreasonable risk or harm, they must report their concerns to their manager or other appropriate person as identified by their organisation, and, where required, to the appropriate regulatory authority.

3.9 Health and safety

3.9.1 *Organisations and researchers* should ensure that all research carried out under their auspices, or for which they are responsible, fulfils all requirements of health and safety legislation and good practice. They should bear in mind that certain types of research, for example social research in a conflict zone, can present particular issues of health and safety. They should ensure that all research which involves potentially hazardous or harmful material or which might cause harm to the environment complies with all legal requirements and other applicable guidelines.

3.9.2 *Organisations* should set up systems to ensure that such research undergoes all forms of appropriate review in accordance with the organisation's policy on health and safety.

3.9.3 *Researchers* should submit such research for all forms of appropriate review and abide by the outcome of that review.

3.10 Intellectual property

3.10.1 *Organisations and researchers* should ensure that any contracts or agreements relating to research include provision for ownership and use of intellectual property. Intellectual property includes, but is not limited to: research data and other findings of research; ideas, processes, software, hardware, apparatus and equipment; substances and materials; and artistic and literary works, including academic and scientific publications.

3.10.2 Organisations and researchers should not give prior disclosure of research or the findings of research when this might invalidate any commercial property rights that could result. Organisations and researchers should recognise, however, that the presumption should be that any intellectual property discovered or developed using public or charitable funds should be disseminated in order to have a beneficial effect on society at large. That presumption may be rebutted where there is an express restriction placed on any such dissemination. Any delay in publication and dissemination pending protection of intellectual property should be kept to a minimum.

3.10.3 Organisations and researchers should comply with any additional conditions relating to intellectual property required by funding bodies.

3.10.4 *Organisations* should clearly state when their standard guidance might not apply; for example, a university would normally waive copyright of articles prepared for publication in journals or books.

3.10.5 *Researchers* should try to anticipate any issues that might arise relating to intellectual property at the earliest opportunity and agree jointly in advance how they might be addressed, communicating any decisions to all members of the research team.

3.11 Finance

3.11.1 *Organisations and researchers* should ensure that the terms and conditions of any grant or contract related to the research are adhered to.

3.11.2 *Organisations* should issue guidelines regarding the purchasing or procurement of materials, equipment or other resources for research and the hiring of staff for research projects. These guidelines should include statements on the ownership of resources and the rights of researchers to use them. Organisations should also set up procedures for the monitoring and audit of finances relating to research projects.

3.11.3 *Researchers* should comply with organisational guidelines regarding the use and management of finances relating to research projects. They should co-operate with any monitoring and audit of finances relating to research projects and report any concerns or irregularities to the appropriate person(s) as soon as they become aware of them.

3.12 Collection and retention of data

3.12.1 *Organisations and researchers* should comply with all legal, ethical, funding body and organisational requirements for the collection, use and storage of data, especially personal data, where particular attention should be paid to the requirements of data protection

legislation. They should also maintain confidentiality where undertakings have been made to third parties or to protect intellectual property rights. Organisations and researchers should ensure that research data relating to publications is available for discussion with other researchers, subject to any existing agreements on confidentiality.

3.12.2 Data should be kept intact for any legally specified period and otherwise for three years at least, subject to any legal, ethical or other requirements, from the end of the project. It should be kept in a form that would enable retrieval by a third party, subject to limitations imposed by legislation and general principles of confidentiality.

3.12.3 Organisations and researchers should comply with any subject-specific requirements for the retention of data; for example, certain disciplines, such as health and biomedicine, may require research data to be retained for a considerably longer period.

3.12.4 If research data is to be deleted or destroyed, either because its agreed period of retention has expired or for legal or ethical reasons, it should be done so in accordance with all legal, ethical, research funder and organisational requirements and with particular concern for confidentiality and security.

3.12.5 *Organisations* should have in place procedures, resources (including physical space) and administrative support to assist researchers in the accurate and efficient collection of data and its storage in a secure and accessible form.

3.12.6 *Researchers* should consider how data will be gathered, analysed and managed, and how and in what form relevant data will eventually be made available to others, at an early stage of the design of the project.

3.12.7 Researchers should collect data accurately, efficiently and according to the agreed design of the research project, and ensure that it is stored in a secure and accessible form.

3.13 Monitoring and audit

3.13.1 *Organisations and researchers* should ensure that research projects comply with any monitoring and audit requirements. They should make sure that researchers charged with carrying out such monitoring and audits have sufficient training, resources and support to fulfil the requirements of the role.

3.13.2 *Organisations* should monitor and audit research projects to ensure that they are being carried out in accordance with good practice, legal and ethical requirements, and any other guidelines, adopting a risk-based and proportional approach.

3.13.3 *Researchers* should consider any requirements for monitoring and audit at an early stage in the design of a project.

3.13.4 Researchers should co-operate with the monitoring and audit of their research projects by applicable bodies and undertake such when required. They should co-operate with any outcomes of the monitoring and audit of their research projects. If they become aware of a need for monitoring and audit where it is not already scheduled, they should report that need to the appropriate person(s).

3.14 Peer review

3.14.1 *Organisations and researchers* should be aware that peer review is an important part of good practice in: the publication and dissemination of research and research findings; the assessment of applications for research grants; and in the ethics review of research projects.

3.14.2 *Organisations* should encourage researchers to act as peer reviewers for meetings, journals and other publications, grant applications and ethics review of research proposals, and support those who do so. They should recognise the obligations of peer reviewers to be thorough and objective in their work and to maintain confidentiality, and should not put pressure, directly or indirectly, on peer reviewers to breach these obligations.

3.14.3 *Researchers* who carry out peer review should do so to the highest standards of thoroughness and objectivity. They should follow the guidelines for peer review of any organisation for which they carry out such work.

3.14.4 Researchers should maintain confidentiality and not retain or copy any material under review without the express written permission of the organisation which requested the review. They should not make use of research designs or research findings from a paper under review without the express permission of the author(s) and should not allow others to do so. Researchers acting as peer reviewers must declare any relevant conflicts of interest.

3.14.5 While carrying out peer review, researchers may become aware of possible misconduct, such as plagiarism, fabrication or falsification, or have ethical concerns about the design or conduct of the research. In such cases they should inform, in confidence, an appropriate representative of the organisation which requested the review, such as the editor of the relevant journal or chair of the relevant grants or ethics committee.

3.15 Publication and authorship

3.15.1 *Organisations and researchers* should accept their duty to publish and disseminate research in a manner that reports the research and all the findings of the research accurately and without selection that could be misleading.

3.15.2 *Organisations* should ensure that sponsors and funders of research: respect the duty of researchers to publish their research and the findings of their research; do not discourage or suppress appropriate publication or dissemination; and do not attempt to influence the presentation or interpretation of findings inappropriately.

3.15.3 Organisations should provide training and support to guide researchers in the publication and dissemination of research and the findings of research that involves: confidential or proprietary information; issues relating to patents or intellectual property; findings with serious implications for public health; contractual or other legal obligations; and/or interest from the media or the general public.

3.15.4 *Researchers* should address issues relating to publication and authorship, especially the roles of all collaborators and contributors, at an early stage of the design of a project, recognising that, subject to legal and ethical requirements, roles and contributions may change during the time span of the research. Decisions on publication and authorship should be agreed jointly and communicated to all members of the research team.

3.15.5 Authorship should be restricted to those contributors and collaborators who have made a significant intellectual or practical contribution to the work. No person who fulfils the criteria for authorship should be excluded from the submitted work. Authorship should not be allocated to honorary or "guest" authors (i.e. those that do not fulfil criteria of authorship). Researchers should be aware that anyone listed as an author of any work should be prepared to take public responsibility for that work and ensure its accuracy, and be able to identify their contribution to it.

3.15.6 Researchers should list the work of all contributors who do not meet the criteria for authorship in an acknowledgements section. All funders and sponsors of research should be clearly acknowledged and any competing interests listed.

3.15.7 Researchers must clearly acknowledge all sources used in their research and seek permission from any individuals if a significant amount of their work has been used in the publication.

3.15.8 Researchers must adhere to any conditions set by funding or other bodies regarding the publication of their research and its findings in open access repositories within a set period.

3.15.9 Researchers should declare any potential or actual conflicts of interest in relation to their research when reporting their findings at meetings or in publications.

3.15.10 Researchers should be aware that submitting research reports to more than one potential publisher at any given time (i.e. duplicate submission) or publishing findings in more than one publication without disclosure and appropriate acknowledgement of any previous publications (i.e. duplicate publication) is unacceptable.

3.15.11 Researchers who are discouraged from publishing and disseminating their research or its findings, or subjected to attempts to influence the presentation or interpretation of findings inappropriately, should discuss this with the appropriate person(s) in their organisation so that the matter can be resolved.

3.16 Misconduct in research

3.16.1 *Organisations* should define what they consider to be misconduct in research and make it known to researchers. UKRIO defines misconduct in research as including, but not limited to:

a) Fabrication;

b) Falsification;

c) Misrepresentation of data and/or interests and/or involvement;

d) Plagiarism; and

e) Failures to follow accepted procedures or to exercise due care in carrying out responsibilities for:
   i) avoiding unreasonable risk or harm to:
      - humans;
      - animals used in research; and
      - the environment; and

ii) the proper handling of privileged or private information on individuals collected during the research.

3.16.2 Organisations should establish and publicise a procedure to investigate allegations of misconduct in research (as in section 3.1.4) and ensure that any such allegations are investigated thoroughly and fairly and in a timely manner. The UKRIO *Procedure for the Investigation of Misconduct in Research* outlines a standard process for investigating alleged misconduct that is thorough and fair to all parties.

3.16.3 Organisations should identify and make known one or more members of staff who have responsibility for investigating allegations of misconduct in research and whom researchers and external organisations, such as journals, can contact with any concerns about the conduct of research. They should make sure that staff who investigate allegations have the necessary training, resources and support to fulfil the requirements of the role.

3.16.4 Organisations should make it clear to researchers that any misconduct in research is unacceptable and should be reported; that researchers who are found to have committed misconduct in research will be subject to disciplinary proceedings; and that where researchers are members of a regulated profession, cases of serious misconduct in research will be referred to the body regulating their profession. They should also make it clear that researchers who are found not to have committed misconduct will be supported and appropriate steps taken to restore their reputation and that of any relevant research project(s).

3.16.5 Organisations should support those who raise concerns about the conduct of research in good faith and *not* penalise them. This support should be in accordance with the organisation's policy on raising concerns or "whistle blowing".

3.16.6 *Researchers* should know what constitutes misconduct in research and report any suspected misconduct through the relevant procedure of the organisation as soon as they become aware of it. They should recognise that good practice in research includes reporting concerns about the conduct of research and should co-operate with any investigation of misconduct in research when requested. Researchers should work with their institution to support those who raise concerns in good faith about the conduct of research and those who have been exonerated of suspected misconduct.

APPENDIX

Acknowledgements and bibliography

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Code of Practice for Research:
Promoting good practice and preventing misconduct

The Code of Practice for Research has been designed to encourage good conduct in research and help prevent misconduct, in order to assist organisations and researchers to conduct research of the highest quality. It provides general principles and core standards for good practice in research, applicable to both researchers and research organisations. It also includes a Recommended Checklist for Researchers: a one-page, non-technical checklist for the key points of good practice in research, based upon the more detailed standards provided by the Code.

The Code is a reference tool for research organisations to use when drafting or revising their codes of practice for research and complements existing guidance on research conduct, such as that provided by Research Councils UK, the Wellcome Trust and the Council for Science and Technology. Use of the benchmarks in this Code can assist research organisations in fulfilling the requirements of regulatory, funding and other bodies, and ensure that important issues have not been overlooked.

The Code is applicable to all subject areas and does not attempt to micro-manage research. It draws upon existing good practice and the experiences of the UK Research Integrity Office in addressing good conduct and misconduct in research. Detailed guidance is given on standards for good practice in research but particular attention has been paid to the areas where we have most often been approached for guidance, in the hope of passing on lessons learned to the research community.

This publication is also available on the UK Research Integrity Office website www.ukrio.org

About us

The UK Research Integrity Office (UKRIO) is an independent body which offers advice and guidance to universities, other research organisations and individual researchers about the conduct of research.

Hosted by Universities UK and supported by government and by the major regulators and funders of health and biomedical research, our aims are to:

- promote the good governance, management and conduct of research;
- share good practice on how to address misconduct in research; and
- give confidential, expert advice and guidance on specific cases and issues.

Although our formal remit is to provide support to the health and biomedical sciences research community, since our inception we have given advice and guidance to universities, NHS institutions, other research organisations and individual researchers across all subject areas.

UKRIO is not a regulatory body and has no formal legal powers. It was set up to provide independent support to employers, research organisations and researchers where there was none. The advice and guidance it offers is not mandatory but reflects best practice in the conduct of research and addressing misconduct.

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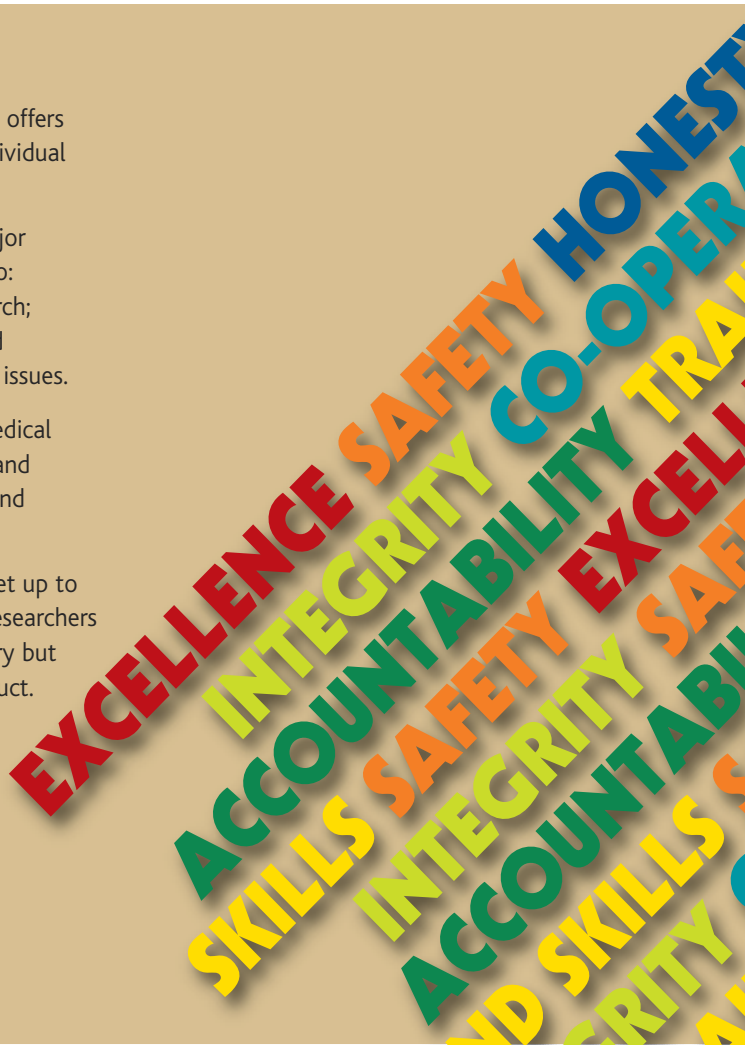

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