ISO/DIS 20387

A draft ISO standard for general requirements in biobanking

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ISO/TC276/Working Group 2 (Biobanks and bioresources)

Design and Purpose

- Aims to be more suited to biobanking than ISO 9001
- “Horizontal” standard
  - Aims to apply across all types of biobanks/bioresources
    - Human, animal, plant, micro-organisms etc. in R&D
    - Specifies general requirements to ensure appropriate quality
    - “Vertical standards” will appear later for specific areas
  - Not intended for
    - Food production
    - Therapeutic use
    - Biobanks solely for diagnosis → ISO 15189
  - Terminology of Standard
    - Internationally-agreed
    - Conforms to CASCO when necessary
    - US spellings
    - Does not replace national law

General Requirements

- Procedures to address each type of biological resource held
  - Collecting/procuring, acquiring and receiving, tagging, accessioning/logging, cataloguing/classification, examination, processing, replicating, storing, data management, destroying, packaging, safeguarding, distributing, transporting, risk management, personnel
  - No big surprise for HTA-licensed biobanks
- Compliance with relevant ethical principles
  - No big surprise for any UK collection of human tissue

Impartiality and Confidentiality

- Your structure and management must safeguard impartiality
  - Be able to demonstrate impartiality not swayed by commercial or financial pressures
  - Reviewed assessment of risks to impartiality, and how minimised
- Protect confidential information and proprietary rights, via
  - Legally enforceable commitments (agreement, contract, licence)
  - When possible, inform providers in advance about communication of confidential information (consent, agreement, contract)
  - No surprises – required in UK by ethical approval, HT Act, DPA, other legislation

Structural Requirements I

- Be a legal entity, or be part of a legal entity, that is responsible for its actions
  - Have a course of action to address liabilities (insurance)
  - Meet the requirements of the Standard and stakeholders
- Document your structure and relationships
  - Organisational, managerial, technical, support
  - Responsibilities and authorities of personnel

Structural Requirements II

- Ensure you have personnel who, irrespective of other responsibilities, have the authority and resources needed to carry out their duties
  - Management systems, deviation, CAPA, reporting/improvement, validation
  - Doesn’t necessarily mean a dedicated QM
- Ensure you maintain the integrity of your management system
  - Change control
  - Communication of effectiveness (monitoring, trend analysis, feedback)
  - Personnel understand need to meet user/other requirements

General Resource Requirements

- Ensure you have everything you need to perform activities
  - Don’t offer what you can’t fully support
  - Have contingency planning (staff cover, back-up power, back-up freezers, database failure protocol)
- Document your strategy to safeguard continued financial viability for the expected lifetime of storage / handling activities
  - Self-funding, grants, contingency agreements
  - UK wishes to amend this wording

Personnel

- Few surprises to publicly-funded organisations, or large commercials, but…
- Must define and document the competence requirements
  - Based on appropriate education, training, demonstrated skills and/or experience necessary to perform duties
  - Defined by biobank
  - Documented on an ongoing basis
  - Includes Health & Safety training, as deemed appropriate by risk assessment
  - Must also include a formal induction and orientation
  - Personnel supervised until deemed competent

Infrastructure and Environment

- Your infrastructure must ensure conformity, biosafety, and biosecurity
- Where necessary, separate incompatible activities in neighbouring areas, e.g.
  - Take measures to avoid cross-contamination
  - Separate computer systems (NHS v Academic)
  - Put doors between areas
  - Use different swipe access for raised containment levels
- Measure, monitor, control, and record environmental conditions where quality and/or H&S involved
  - Already required for HTA licences and trials, e.g. freezers, radioactivity, CL3 pressures

Externally Provided Processes, Products and Services

- You determine procedures and requirements
  - To select external supplier, e.g. critical characteristics of product, ability to provide in timeframe, ISO 9001 certified
  - Assess their risk to your compliance
- You communicate your requirements to the external supplier
  - Retain evidence of communication
- You ensure their conformance
  - Monitor their performance, e.g. proof of formal acceptance against critical criteria
  - Review their performance at pre-defined intervals, reacting accordingly
- Use of external storage must be communicated to users

Externally Provided Preservation, Storage, and Authentication

- You need to ensure supplier's processes are validated to ISO 20387
  - Intended to cover e.g. outsourced storage
  - Interpretation of e.g. "externally provided preservation" could include validating an NHS nurse drawing blood into an EDTA tube?
- You perform internal audit of outsourced service at least once a year
  - See also ISO 19011

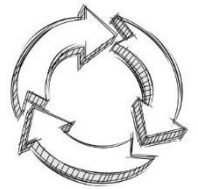
Equipment and Software I

- You maintain register / database listing “critical” vs non-critical equipment
  - Intended to mean freezers, pipettes, scanners, etc. not pencils, paper
- You record performance, maintenance, verification / validation information for each item
  - Likely to include validation of critical custom software
  - Could be interpreted as meaning installation of OS by approved IT service
  - Not intended to mean validation of commercial OS (impossible), but could mean documented verification that it is required version/build
- You document processes to install, handle, transport, store, use, calibrate (if needed) equipment and software

Equipment and Software II

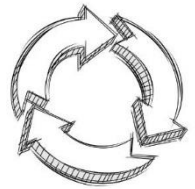
- You must record a minimum information set for critical equipment
- You must safeguard critical equipment from adjustment that would invalidate “output”
  - e.g. locks on centrifuge programs, or requirement to document verification of correct setting before each use
- You must ensure unbroken traceability of critical readings to an appropriate reference
  - e.g. thermometers, centrifuge speeds, micropipettor volumes
- Non-compliant equipment marked “out of service” until re-certified
  - Possible effects of non-compliance on previous biological resources examined and acted upon

Process Requirements I



- You define “lifecycle stages” which contribute to fitness for purpose
  - Example: collection, accession, identification, preservation, long-term storage, quality control, transport, disposal
  - Present as schematic, followed by detailed procedures
  - Make readily available to personnel
- Date-time for each relevant stage (to ISO 8601)
  - Does not mean timestamp for every stage – just every stage deemed “critical” by you/user, except…
  - Collection date-time mandatory
  - Difficult to achieve in current routine NHS environments; in theory less problematic for ISO 15189 Pathology Depts

Process Requirements II



- Collection information must also include basic data
  - Taxonomic information (default = human!)
  - Place and procedure of collection (e.g. Theatres, excision)
  - Any other information relevant to accomplish biobank objectives
- You must document pre-analytical steps used to assess fitness of material for purpose
- You must ensure collection is:
  - Planned by relevant qualified personnel/users according to your/user requirements
  - Performed by qualified personnel
  - When clinical assessment/diagnosis required, done under supervision of medically-qualified personnel

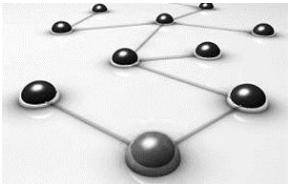
Shipping and Transport

- You must have documented shipping procedures
  - Intended to mean to/from biobank
  - Includes safety, packaging, organising, receipt
  - Critical transport conditions (if any) defined and monitored
  - You must track of chain of custody from shipper to receiver
  - Only trained personnel involved
  - Not incompatible with clinician-mediated transfer from NHS to Academic biobank
- You must have documented internal transport procedures
  - Intended to cover biobanks with >1 self-contained area (e.g. multi-floor in shared building, multi-building)
  - Very similar to shipping, except designated unattended “custody zones” may be defined

Reception

- You have documented procedures for
  - Material produced within the biobank, purchased, deposited, or consigned to biobank
  - Acceptance criteria, including biosafety, biosecurity, IPR
  - Segregation (“quarantine”) in appropriate conditions until formally accepted
- You must obtain copies of available associated documented information
  - Note “available” – if consent copy is not permitted, it’s not available!

Traceability



- Must be across whole lifecycle, robust
- Tagging of material must be suitable for handling/storage conditions
- Must have linkage to information on permitted/restricted use
- Must have association with relevant versions of relevant procedures
  - Can be interpreted as “implicit by date” as well as “explicit by data entry”
- Annotation and query of any handling procedures must be possible, and deviations must be flaggable
  - Can be interpreted as “mixture of database and paper records” (not just “database only”)
- Location of material must be identifiable at all times
  - Includes act of distribution or destruction
- Disposal/transfer procedures must cater for emergencies *and* planned events

Preservation

- Means “stabilisation of desired properties”
  - EDTA tube for blood, refrigeration, fixation, freezing
- You define according to evidence-base or user-specifications
- You monitor and time-stamp each preservation step
- You time-stamp start of each intermediate *critical* step
- You have a disaster plan for storage failure
- Your storage locations must be precise, audited, and minimise risk of contamination/loss of quality

Quality Control I

- Large section, due to wide diversity of “biobanks”
  - Combined diagnostic/research biobanks in several countries
  - Contributes to the interoperability of all biobanks
- Key phrases:
  - “The biobank shall define a minimum set of QC procedures to be performed on the biological resource”
  - “Exceptions can be justified for rare or legacy biological resources and QC procedures which lead to biological material elimination”
  - If none are possible, then document that none are possible

Quality Control II

- For QC Procedures
  - You pre-define the specifications
  - You perform QC at planned intervals
  - You analyse and trend
  - You use appropriate QC reference materials, e.g.
    - Certified reference materials
    - Previous samples
    - Material previously shared with other biobanks
    - Control material in EQA
- Data QC
  - You identify critical data
  - You perform random checks on regular basis for accuracy, completeness, consistency

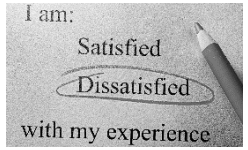
Nonconforming Outputs

- If something is not right:
  - You quarantine
  - You perform fitness/risk assessment
  - You determine and perform CAPA, and/or authorise for release under concession, or initiate recall in a timely manner
  - You review effectiveness of PA
  - You communicate with affected users
- Nonconforming includes “legacy” material
  - Everything collected before first adoption of ISO standard

Validation and Verification

- Validation
  - “Confirmation, through the provision of objective evidence, that the requirements for a specific intended use or application have been fulfilled”
- Verification
  - “Confirmation, through the provision of objective evidence, that specified requirements have been fulfilled”
- You verify all standard methods
- You validate/verify all non-standard/modified/”own” methods to ensure material can meet its specification
- You document validation/verification and retain for a pre-defined period
  - ISO 21899 can be used to help

Complaints and Management Systems



- Biobanks should have a fully functional complaint system
- ISO 20387 provides the minimum requirements for a management system
- Alternatively, a management system meeting ISO 9001 – but used in a way to achieve the aims of ISO 20387 – should be acceptable

What Next?

- Talk to me 1:10pm – 2:00pm
- National comments discussed and addressed in November
  - If only editorial comments, the document will proceed to publication
  - If significant technical comments, document goes to Final Draft International Standard (FDIS)
  - Editorial comments only may be provided during 2-month FDIS ballot
- Publication phase to follow
- A “TR” (Technical Report) is being drafted
  - Interpretation guidance
  - Implementation guidance