UNIVERSITY OF OXFORD

IDEAL Collaboration

IDEAL 2017 Conference, New York

IDEAL Orthopaedic Surgery

SITU
SURGICAL INTERVENTION TRIALS UNIT

RCS
OXFORD SURGICAL TRIALS CENTRE

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Disclosures

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- PRO-MAPP Ltd – Director – Oxford U Spin Out

- No conflicts with content of this session

IDEAL-D

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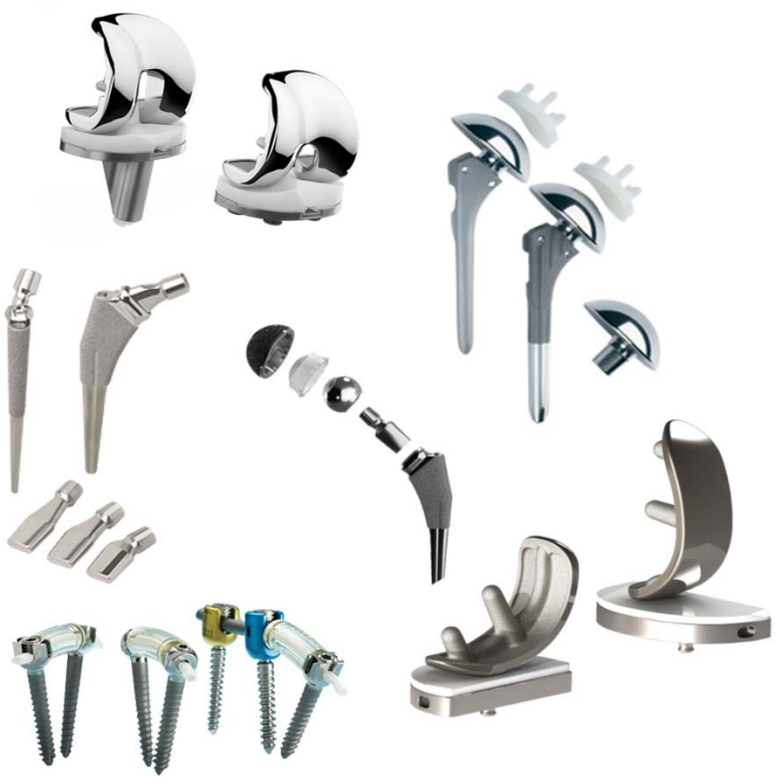
Table 2| **Brief description of the IDEAL stages and proposals for modifications to develop IDEAL-D**

Main IDEAL recommendations (procedures/operations)	IDEAL-D recommendations (devices)
Stage 0 (preclinical)	
Silent but recognised: no recommendations for study design or reporting.	Standards for publication/registration of preclinical data need to be established (as devices may not progress through IDEAL stages 1, 2, and 3).
Stage 1 (first-in-human)	
Compulsory reporting of all new innovations to accessible international registry.	Reporting of first-in-human use integrated into a process by which devices are patented and regulated. May use existing channels—for example, ClinicalTrials.gov—but must conform to a basic standard of evidence presentation to allow learning. Confidential reporting allowed but manufacturers might still be liable
Confidential entry allowed to encourage reporting of failed innovations.	
Stage 2 (prospective developmental studies exploratory studies)	
Stage 2a: Small uncontrolled cohort studies, usually single centre, with consecutive case reporting and explanation of timing and rationale of changes in procedure or indication, and timing. Addresses the "tinkering" stage of rapid iterative innovation. Focus on technical details and feasibility	Device iterations mostly occur in stages 0-1, but problems with device insertion/activation may require iteration. In clinical studies (investigational device exemption in US) consensus will still be required where multiple manufacturers produce rival devices. Stages 2a and 2b may be combined if rationale for separation seems weak. Quality control and learning curve estimation remain important, and studies should be conducted in experienced centres to minimise risk of harm. Regulators provide guidance on study designs
Stage 2b: Large uncontrolled prospective cohort study or audit, studying learning curves and building consensus on definitions, quality control, and outcome expectations for a stage 3 trial. May include range of alternative treatments in cohort	
Stage 3 (assessment via randomised controlled trial or alternatives)	
Procedure now gaining wide acceptance and considered as a possible replacement for current standard. Definitive clinical comparison (preferably randomised controlled trial) against current best practice should occur once learning curves are overcome and consensus is achieved over definition of intervention, indications, and quality control measures	Trial(s) might follow stages 2a and 2b or proceed immediately after stage 1 (fused stages 2a, 2b, and 3) where insertion/activation is simple, meaning that learning, quality control, and intervention definition are not major issues. Regulators should reach consensus on an international set of principles for deciding when a randomised controlled trial is needed
Stage 4 (long term study)	
Registries for monitoring late and rare problems and changes in use (indication creep)	Registries valuable but may begin much earlier, particularly for "me-too" products that enter practice after stage 0
	For novel devices, registries should ensure controlled introduction
	Nested randomised controlled trials possible within registries



1. 1st in man – bio shoulder
2. Innovation to market – spine
3. Registries and surveillance - hip

Faculty

- Prof. Stephen Graves – Ortho Surgeon – Aust. Joint Registry
- Prof. Andrew Carr – Ortho Surgeon – innovator/academic/triallist
- Mr. Jeff Dunkel – VP Titan Spine – Health Strategist

- Mr. Blair Fraser – VP Smith & Nephew – Scientific affairs / Registries
- Dr. Pamela Plouhar – VP DePuy/J&J – Clinical Research/NIHR
- Dr. Liz Walton-Paxton – Dir. Kaiser Permanente – Surveill/Registry/FDA

- **General discussion around area**
- **IDEAL specific**

Objective

- Explore and outline best ways of;

Safe efficient evaluation of surgical devices
WITHOUT
suffocating innovation

First in man – Andrew Carr/Pam Plouhar

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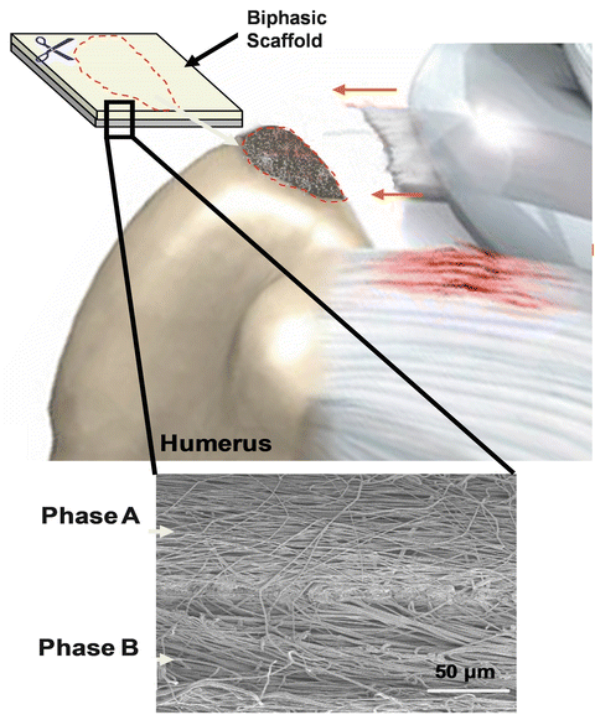
- Lots of needs - IDEAL has “a lot to cope with”
- Fast moving - no standards/template
- Sometimes difficult to set requirements (n=?)
- How to deal with pauses in development
- Clear aims critical
- Patent – confidentiality
- How detailed for reporting
- Just safety?
- Commercial interest/conflict/bias?



Innovation testing: Jeff Dunkel/Liz Paxton

- "Accidental" discovery of new nanatexture process to help spinal integration.
- FDA requirements
- Tough scientific demands – agreed was correct
- Dependence on retrospective "costing" data
- Costly process
- Needed tenacity to overcome
- IRB to publication ratio is a useful metric
- More structure and knowledge (esp IDEAL) likely helpful in process – echoed by LP

Registries: Steven Graves/Blair Fraser

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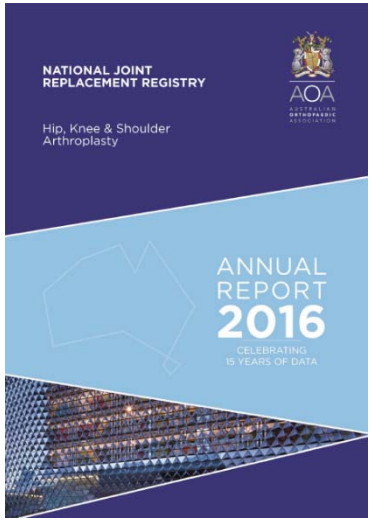
- Registries
  - Definition of a registry
  - Safety or outcome or both?
  - Good compliance
  - Good for simple questions
  - Choice of outcome measures critical
    - Survival? Revision or PROM
  - Mimic products (me too's)
  - A priori tailored risk assessment could be a better way?
  - Who pays?
  - Definite place for IDEAL (stage 4)



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- Orthopaedics first in man, any differences compared with other specialities? Risk lower?
- What is safe? How many needed? Confidentiality?

- Innovation journey – where are the gaps - how do we get standardisation?
- Spine special issues? Failure v success?

- Registries – comparators – confounders – grandfather new similar products
- When should we start a registry – is it from first implantation