Xenotransplantation and Risk

Some developing biotechnologies challenge accepted legal and ethical norms because of the risks they pose. Xenotransplantation (cross-species transplantation) may prolong life but may also harm the xeno-recipient and the public due to its potential to transmit infectious diseases. These transboundary diseases emphasise the global nature of advances in health care and highlight the difficulties of identifying, monitoring and regulating such risks and thereby protecting individual and public health. Xenotransplantation raises questions about how uncertainty and risk are understood and accepted, and exposes tensions between private benefit and public health. Where public health is at risk, a precautionary approach informed by the harm principle supports prioritising the latter, but the issues raised by genetically engineered solid organ xenotransplants have not, as yet, been sufficiently discussed. This must occur prior to their clinical introduction because of the necessary changes to accepted norms which are needed to appropriately safeguard individual and public health.

Sara Fovargue is a senior lecturer in law at Lancaster University, where she specialises in health care law and ethics. Her main interests are clinical research involving human and non-human animals, risk and regulation with regard to developing biotechnologies and decision-making practices for vulnerable groups within health care law and practice.
This series of books was founded by Cambridge University Press with Alexander McCall Smith as its first editor in 2003. It focuses on the law’s complex and troubled relationship with medicine across both the developed and the developing world. In the past twenty years, we have seen in many countries increasing resort to the courts by dissatisfied patients and a growing use of the courts to attempt to resolve intractable ethical dilemmas. At the same time, legislatures across the world have struggled to address the questions posed by both the successes and the failures of modern medicine, while international organisations such as the WHO and UNESCO now regularly address issues of medical law.

It follows that we would expect ethical and policy questions to be integral to the analysis of the legal issues discussed in this series. The series responds to the high profile of medical law in universities, in legal and medical practice, as well as in public and political affairs. We seek to reflect the evidence that many major health-related policy debates in the UK, Europe and the international community over the past two decades have involved a strong medical law dimension. Organ retention, embryonic stem cell research, physician assisted suicide and the allocation of resources to fund health care are but a few examples among many. The emphasis of this series is thus on matters of public concern and/or practical significance. We look for books that could make a difference to the development of medical law and enhance the role of medico-legal debate in policy circles. That is not to say that we lack interest in the important theoretical dimensions of the subject, but we aim to ensure that theoretical debate is grounded in the realities of how the law does and should interact with medicine and health care.

General Editors
Professor Margaret Brazier,
University of Manchester

Professor Graeme Laurie,
University of Edinburgh

Editorial Advisory Board
Professor Richard Ashcroft,
Queen Mary, University of London

Professor Martin Bobrow,
University of Cambridge

Dr Alexander Morgan Capron,
Director, Ethics and Health, World Health Organization, Geneva

Professor Jim Childress,
University of Virginia

Professor Ruth Chadwick,
Cardiff Law School

Dame Ruth Deech,
University of Oxford
Professor John Keown,
Georgetown University, Washington, DC

Dr Kathy Liddell,
University of Cambridge

Professor Alexander McCall Smith,
University of Edinburgh

Professor Dr Mónica Navarro-Michel,
University of Barcelona

Marcus Radetzki, Marian Radetzki, Niklas Juth
Genes and Insurance: Ethical, Legal and Economic Issues

Ruth Macklin
Double Standards in Medical Research in Developing Countries

Donna Dickenson
Property in the Body: Feminist Perspectives

Matti Häyry, Ruth Chadwick, Vilhjálmur Árnason, Gardar Árnason
The Ethics and Governance of Human Genetic Databases: European Perspectives

Ken Mason
The Troubled Pregnancy: Legal Wrongs and Rights in Reproduction

Daniel Sperling
Posthumous Interests: Legal and Ethical Perspectives

Keith Syrett
Late, Legitimacy and the Rationing of Health Care

Alastair Maclean
Autonomy, Informed Consent and the Law: A Relational Change

Heather Widdows, Caroline Mullen
The Governance of Genetic Information: Who Decides?

David Price
Human Tissue in Transplantation and Research

Matti Häyry
Rationality and the Genetic Challenge: Making People Better?

Mary Donnelly

Anne-Maree Farrell, David Price and Muireann Quigley
Organ Shortage: Ethics, Law and Pragmatism

Sara Fovargue
Xenotransplantation and Risk: Regulating a Developing Biotechnology
Xenotransplantation and Risk: Regulating a Developing Biotechnology

Sara Fovargue
For Mia
Contents

Acknowledgements

1 Introducing the issues
   What is xenotransplantation? 1
   Why focus on xenotransplantation? 4
   Themes
      Risk 5
      The public 6
      Regulating risk 7
      Challenges to legal and ethical norms 9
      Public health and global concerns 10
      Respecting individual and collective human rights 11
   Conclusion 12

2 Dealing with risk
   The science
      Immunological 16
      Physiological 17
      Microbiological 18
   Risk assessment: evaluating the risks
      What could be transmitted? 19
      Known infections 19
      Unknown infections 21
      Can xenotransplants transmit infections? 21
   Communicating and managing risks
   Risk communication
      Trust and confidence 28
      (Dis)trust in practice – BSE in the UK 29
      The fallout 32
   Managing risks
      Cost–benefit analysis 36
      A precautionary approach 37
      The harm principle 39
      Precaution, harm and xenotransplantation 40
   Public health
   Public health and xenotransplantation 45
   Public involvement in the decision-making process 47

page xiii

© in this web service Cambridge University Press www.cambridge.org
x Contents

GM crops 49
Gene therapy 51
Xenotransplantation 51
Involving the public in xenotransplant decisions 54
Conclusion 57

3 Regulating experimental procedures and medical research 61
Definitions 62
Experimentation procedures 62
Medical research 64
Genetically engineered solid organ clinical xenotransplants 65
Regulatory schemes 70
Experimentation procedures 70
The law 70
Ethical guidance 76
Xenotransplantation 78
Regulating research 80
The law 80
Ethical guidance 81
Xenotransplantation 83
Selecting xenotransplant recipients 87
Involving those with no other hope 88
Xenotransplantation 90
Offering experimental procedures 92
The law 92
Ethical guidance 93
Xenotransplantation 93
Offering medical research 94
The law 94
Ethical guidance 95
Xenotransplantation 98
Conclusion 99

4 Regulatory responses to developing biotechnologies 103
Devising IVF national regulation 104
Pre-clinical 104
Post-clinical 1978–88 107
Government-established committees 107
Guidelines and reports from NGOs 108
Statutory activity 109
International activity 110
Devising national gene therapy regulation 111
Pre-clinical 111
Post-clinical 1990–2000 113
Government-established committees 113
Guidelines and reports from NGOs 114
Statutory activity 115
International activity 115
Emerging themes 117
Devising national xenotransplant regulation 119
## Contents

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-clinical</td>
<td>119</td>
</tr>
<tr>
<td>Government-established committees</td>
<td>120</td>
</tr>
<tr>
<td>Guidelines and reports from NGOs</td>
<td>123</td>
</tr>
<tr>
<td>Statutory activity</td>
<td>124</td>
</tr>
<tr>
<td>International activity</td>
<td>125</td>
</tr>
<tr>
<td>Implementing the recommendations</td>
<td>127</td>
</tr>
<tr>
<td>National committees</td>
<td>128</td>
</tr>
<tr>
<td>New</td>
<td>128</td>
</tr>
<tr>
<td>Existing</td>
<td>132</td>
</tr>
<tr>
<td>Legislation</td>
<td>135</td>
</tr>
<tr>
<td>International regulation</td>
<td>137</td>
</tr>
<tr>
<td>Some problems with regulating developing biotechnologies</td>
<td>138</td>
</tr>
<tr>
<td>Global health and health tourism</td>
<td>138</td>
</tr>
<tr>
<td>Business, finance and ‘the market’</td>
<td>141</td>
</tr>
<tr>
<td>Global regulation</td>
<td>143</td>
</tr>
<tr>
<td>Conclusion</td>
<td>144</td>
</tr>
</tbody>
</table>

### 5 Challenges to legal and ethical norms: first-party consent and third parties at risk

<table>
<thead>
<tr>
<th>Subsection</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consent to being a xeno-recipient</td>
<td>148</td>
</tr>
<tr>
<td>Requirements of valid consent</td>
<td>154</td>
</tr>
<tr>
<td>Questions of competency</td>
<td>154</td>
</tr>
<tr>
<td>Can a xeno-recipient with no other hope be competent to consent to a clinical trial?</td>
<td>155</td>
</tr>
<tr>
<td>Competency status of those with no other hope</td>
<td>157</td>
</tr>
<tr>
<td>Voluntariness</td>
<td>159</td>
</tr>
<tr>
<td>Dual role</td>
<td>160</td>
</tr>
<tr>
<td>Obtaining consent</td>
<td>163</td>
</tr>
<tr>
<td>Informed decision-making</td>
<td>166</td>
</tr>
<tr>
<td>Who decides what should be disclosed?</td>
<td>167</td>
</tr>
<tr>
<td>What should be disclosed?</td>
<td>168</td>
</tr>
<tr>
<td>What should be disclosed to xeno-recipients?</td>
<td>172</td>
</tr>
<tr>
<td>Problems disclosing information</td>
<td>177</td>
</tr>
<tr>
<td>Changes to first-party consent for xenotransplantation</td>
<td>179</td>
</tr>
<tr>
<td>The nature of consent</td>
<td>179</td>
</tr>
<tr>
<td>The process</td>
<td>180</td>
</tr>
<tr>
<td>Third-party consent to xenotransplantation</td>
<td>183</td>
</tr>
<tr>
<td>Conclusion</td>
<td>185</td>
</tr>
</tbody>
</table>

### 6 Surveillance and monitoring: balancing public health and individual freedom

<table>
<thead>
<tr>
<th>Subsection</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-2000 proposed surveillance regimes</td>
<td>189</td>
</tr>
<tr>
<td>Local</td>
<td>191</td>
</tr>
<tr>
<td>Sampling and archiving</td>
<td>192</td>
</tr>
<tr>
<td>Xeno-recipients</td>
<td>193</td>
</tr>
<tr>
<td>Close contacts</td>
<td>193</td>
</tr>
<tr>
<td>Health workers</td>
<td>195</td>
</tr>
<tr>
<td>Additional requirements</td>
<td>196</td>
</tr>
<tr>
<td>Xeno-recipients</td>
<td>197</td>
</tr>
<tr>
<td>Procreation</td>
<td>197</td>
</tr>
</tbody>
</table>
Contents

Donation, post-mortems and tissue storage 200
Contacts 201
Health workers 202
National 203
International 204
Effective surveillance? 205
Post-2000 regimes 208
Consent, compliance and enforcement 211
Consent and non-compliance 212
Third parties 214
Withdrawing consent 216
Alternative methods of ensuring compliance 217
Contract law 218
Existing public health law 220
Existing criminal law 223
Introducing specific xenotransplantation legislation 226
Surveillance and human rights 228
Conclusion 233

Summary and concluding thoughts: looking to the future 237
Conclusion 245

Bibliography 247
Index 281
Acknowledgements

I am very fortunate to have been supported and encouraged by many friends and colleagues during the writing of this book. I am immensely grateful to all of them. In particular I would like to thank Hazel Biggs, Margot Brazier, Sharon Hinnigan, Barbara Mauthe, José Miola and Suzanne Ost. They know why and what they mean to me. I am especially grateful to Hazel and José for reading a draft of this book, and to José for his (painful) editing advice and patience. I would also like to thank Dave Archard, Wendy Doggett, Sue Eckstein, Bobbie Farsides, Jonathan Herring and David Price for their support. Research assistance has also been provided to me in various guises by Emma Cave, Catherine Deering, Tugba Dolan, Lorna Pimperton, Amy Salter and Tania Vazquez-Erosa. David Milman has been an incredibly supportive friend and Head of School, and I am grateful to Lancaster University for granting me study leave during 2010 which greatly assisted my completion of this book. Thanks also to Rodney Brazier, Nita Bright-Thomas, Claire Goli, Helen Higham, Jo Pinnock, Lisa Stoddart, and Frances Wareing for keeping me entertained and vaguely sane during this project. Janet Turnbull and Barbara Salter – thank you for keeping me going for nearly a decade. I cannot thank my family enough for helping and allowing me to find my way during some extraordinary times. My twin sister Bea, without whom I would not want to achieve anything, Gavin, Jack and Alex have provided much needed comfort and light relief. I hope I can repay my parents’ continued encouragement, and I thank Ciaran for his inimitable support. Most of all I want to thank my amazing daughter Mia for incontrovertibly proving what is most important.

You have all helped me get here. Thank you.