Institution: 1007857 Bangor University

Unit of Assessment: 03

Title of case study:
Evidence-based policies for new medicines

1. Summary of the impact (indicative maximum 100 words)

Research at Bangor University's Centre for Health Economics and Medicines Evaluation has had significant influence on pharmaceutical policy development across the UK. This has impacted directly on the parameters by which the prices of new medicines are to be set in the UK, and how the All Wales Medicines Strategy Group (AWMSG) and the National Institute for Health and Care Excellence (NICE) appraise treatments for rare diseases. Research findings have also defined the methods by which biosimilar medicines are appraised in Wales, and underpinned the Welsh (2012) and Scottish (2013) Governments' decisions against establishing Cancer Drugs Funds.

2. Underpinning research (indicative maximum 500 words)

The underpinning research was carried out at Bangor University between 2004-13 by Professor Dyfrig Hughes and colleagues Dr Warren Linley (Senior Research Fellow 2012-2013), Bronwyn Tunnage (Research Officer 2003-2005) and Tien Yeo (Research Officer/Fellow since 2004). We recognised the need for better evidence to inform policies concerning the NHS funding of new medicines, and received funding to support the research from the Welsh Government [3.1] and the Medical Research Council [3.2].

Value based pricing
Value based pricing (VBP) is the system by which branded medicines will be priced in the UK from 2014. We were the first to conduct a study of the public's preferences for a range of criteria for NHS spending priorities on new medicines [3.3]. We used a choice-based format in which 4,118 adult members of the general public were asked to express their preferred way for the NHS to allocate resources between competing hypothetical populations. With explicit consideration of the opportunity cost, respondents were asked to select from a range of resource configurations ranging from all money to be spent on one population, to all money to be spent on the alternative population.

We identified clear preferences for 3 criteria proposed for the value based pricing scheme: 60% of respondents would prioritise a treatment for a severe disease compared with a moderately severe disease, all else being equal. Treatments which address an unmet need were prioritised by 57% of respondents, and medicines associated with wider societal benefits, in the form of reducing patients' reliance on carers, were prioritised by 50%.

Cancer Drugs Fund
The Cancer Drugs Fund was established in England in 2011 to ring-fence £200M per annum for cancer drugs that are judged by NICE to be cost-ineffective. The Lancet called it the "product of political opportunism and intellectual incoherence" (Aug 2010), prompting us to test the public's preferences empirically. We found no preference for cancer treatments – 64% expressed a preference for equal allocation between cancer and non-cancer treatments – nor for treatments (usually for cancer) that extend life, at the end-of-life [3.3].

Biosimilars
Biosimilars are cheaper and therapeutically comparable (but not necessarily equivalent) versions of off-patent biopharmaceutical products. We provided grounds for the justification of cost-minimisation analysis for their economic assessment [3.4]. We demonstrated that even though biosimilars are not equivalent (in the sense of small molecule, generic medicines), there is sufficient similarity in clinical effectiveness to accept cost-minimisation evidence as a basis for

decision-making.

Ultra-orphan drugs
Our research on medicines for exceptionally rare diseases (ultra-orphan drugs) established the parameters by which equity and efficiency should be traded in the context of reimbursement decisions [3.5]. We surveyed 20 European countries for their reimbursement policies of ultra-orphan drugs, the availability of laronidase for mucopolysaccharidosis type 1, and methods of health technology assessment. Based on an assumed societal preference for treatments of rare conditions, we showed that the opportunity cost of positive recommendations, even for seemingly non-cost-effective medicines, may be low and therefore acceptable, provided the budget impact is limited [3.6].

3. References to the research (indicative maximum of six references)

Bangor authors are in **bold**.

1. **Hughes** (Co-Investigator), North West Hub for Trial Methodology Research, Medical Research Council (2008-13; full project: £2.7M). Reference G0800792. Hughes leads on the health economics workstream

2. **Hughes** (Principal Investigator), Pharmacoeconomic support to the All Wales Therapeutics and Toxicology Centre, Welsh Government (2007-14; £951,000). Hughes leads on the health economics workstream

3. **Linley WG, Hughes DA**. Societal views on NICE, Cancer Drugs Fund and Value-Based Pricing criteria for prioritising medicines: A cross-sectional survey of 4118 adults in Great Britain. *Health Economics*. 2013 Aug; 22(8): 948-64. DOI: 10.1002/hec.2872. Submitted to REF 2014 (REF Identifier 0319)

4. **Hughes DA**. Biosimilars: Evidential standards for health technology assessment. *Clinical Pharmacology & Therapeutics* 2010; 87(3): 1-5. DOI: 10.1038/clpt.2009.112. [Cited 6 times, Web of Knowledge].

5. **Hughes DA, Tunnage B, Yeo ST**. Drugs for exceptionally rare diseases: do they deserve special status for funding? *Quarterly Journal of Medicine* 2005 Nov; 98(11): 829-36. DOI: 10.1093/qjmed/hci128. [Cited 54 times, Web of Knowledge].

6. Phillips CJ, **Hughes DA**. HTAs and rare diseases: How to assess their cost-effectiveness. Pharmaceuticals Policy and Law 2011; 13: 161-165. DOI: 10.3233/PPL-2011-0321. [Special issue on European Regulation of Orphan Medicinal Products; endorsed by Mr. John Dalli, European Commissioner for Health]

4. Details of the impact (indicative maximum 750 words)

The following examples represent the reach and significance of our research for medicines' policy across the UK:

Value based pricing
The Department of Health (in England) made its recommendations (in June 2013) on how value is to be defined within the value-based pricing scheme based on research, including ours, which identified circumstances in which funding should be preferentially targeted to some treatments at the expense of others. Our research was independent, timely and authoritative. Commenting on our research, the Department of Health's economic advisor noted that our study "provided an

important corroboration and reference point which complemented and enhanced the work directly commissioned by the Department to understand societal valuation of treatments". "It improved the confidence in the evidence base underlying the system of Value Based Pricing", and has made "a really valuable contribution to development of VBP" [5.1]. Our research findings supported the notion underlying the burden of illness weighting of health outcomes, which has consequently become a central component of the methods for value assessment under value based pricing [5.3]. The implications of these recommendations are significant given that the NHS spends about £9bn a year on branded prescription medicines in the UK, the distribution of which is thus directly influenced by our research.

Cancer drugs fund

The decision by the Welsh Government not to establish a Cancer Drugs Fund (May 2012) was linked to our research which demonstrated that the public does not support the premium pricing of treatments for cancer over other, equally serious conditions [3.3]. Referring to our work, former Welsh Health Minister, Lesley Griffiths said: "This research clearly shows the public supports our evidence-based approach to providing excellent, high quality care for cancer patients in Wales. That is why we have rejected the notion of a Cancer Drugs Fund in Wales" [5.4]. This research was also cited by Alex Neil, Scotland's Cabinet Secretary for Health & Wellbeing [5.5], during parliamentary debate that led the Scottish Government to conclude in July 2013 that "the establishment of a cancer drugs fund in Scotland would not be the answer" [5.6]. Cancer Drugs Funds in Scotland and Wales would have cost about £32m annually, at an opportunity cost (i.e. the health benefits forgone) of around 1,000 Quality-Adjusted Life-Years (QALYs).

Biosimilars

Our research findings on biosimilars [3.4] were adopted as AWMSG policy in 2010: "Cost-minimisation analyses are appropriate for biosimilars only when the reference product has been recommended by AWMSG or NICE for the intended indication; or when the reference product is already in widespread use for the indication" [5.7]. Biosimilar versions of somatropin, filgrastim and epoetin have subsequently been appraised. Since the introduction of biosimilar filgrastim, the overall prescribing of filgrastims has more than doubled. However, because of the lower cost of biosimilars, total expenditure has fallen by 30% (from £0.5m) and the market share of the originator product has reduced from 90% to less than 20% [5.8]. With 7 of the top 10 medicines by spend globally being biopharmaceuticals, and patents due to expire imminently for enoxaparin, rituximab, imatinib, and others, the importance of biosimilars, and their impact on drug budgets, will become ever more significant.

Ultra-orphan drugs

Our research recommendations for a compromise between utilitarian and non-abandonment approaches to appraising ultra-orphan drugs [3.5] formed the basis of the July 2012 AWMSG ultra-orphan drug appraisal policy [3.6, 5.9]. This has facilitated patient access to high cost medicines that would not be considered to be cost-effective according to the standard methods of appraisal; 5 of 8 ultra-orphan drugs appraised between 2007 and 2009 were recommended for use, bringing their approval rate in line with non-orphan medicines. The AWMSG policy for appraising ultra-orphan drugs acknowledges their higher incremental cost-effectiveness ratios, and allows the AWMSG to consider factors besides clinical and cost-effectiveness. This policy was considered by NICE during its initial scoping of ultra-orphan drug policies in December 2012 [5.2], as it took over the responsibilities of the Advisory Group for National Specialised Services for the commissioning of highly specialised treatments in England.

The Welsh ultra-orphan drugs policy, based on our research, is also referenced in April 2013 review of the Scottish Medicines Consortium [5.10], which recommended that it should develop a policy specifically relating to the appraisal of ultra-orphan medicines. The Scottish Parliament Health and Sports Committee accepted the review's recommendations, believing they would ensure a better and more transparent system for accessing new medicines [5.6]. Our work continues to impact on medicines' policies in England, Wales and Scotland and points to increased future benefits to patients throughout the UK.

5. Sources to corroborate the impact (indicative maximum of 10 references)

1. E-mail correspondence: Economic Adviser, Medicines Pharmacy and Industry, Department of Health. 5th October 2012 and 14th October 2013.

2. E-mail correspondence: Technical Adviser - PASLU, National Institute for Health and Care Excellence. 19th December 2012

3. Department of Health: Value-Based Pricing - Terms of Reference. http://www.nice.org.uk/media/9A4/92/DH_VBP_Terms_of_Reference.pdf June 2013

4. WalesOnline. Public backs plan not to ring-fence cancer drug fund say researchers. http://www.walesonline.co.uk/news/health/public-backs-plan-not-ring-fence-2025864 16th Aug 2012

5. The Scottish Parliament. Official Report Debate Contributions - Meeting of the Parliament 20 February 2013. http://www.scottish.parliament.uk/parliamentarybusiness/28862.aspx?r=8142&mode=html [Reference to Bangor's research by Alex Neil at 16:46]

6. Access to New Medicines Scottish Parliament. Health and Sport Committee 8th Report, 2013 Paper 378. http://www.scottish.parliament.uk/S4_HealthandSportCommittee/Reports/her-13-08w.pdf 3rd July 2013. [Quotation from paragraph 87, page 18]

7. AWMSG guidance to manufacturers on assessing biosimilars. http://www.awmsg.org/awmsgonline/docs/awmsg/appraisaldocs/inforandforms/Form%20B%20guidance%20notes.pdf March 2013

8. Sturgess R, Wind K, Karr A, Dolan M for PMSG. A Strategic Approach to the Procurement of Biosimilar Medicines. 10/AWMSG/0213. January 2013. A copy of this document is available on request

9. AWMSG ultra-orphan medicines policy. http://www.awmsg.org/awmsgonline/docs/awmsg/appraisaldocs/inforandforms/AWMSG%20policy%20relating%20to%20ultra-orphan%20medicine.pdf July 2012

10. New Medicines Review 2013: Scottish Medicines Consortium, Scottish Government. http://www.scotland.gov.uk/Resource/0042/00421354.pdf April 2013. [Hughes' referenced. Page 21 refers specifically to the AWMSG policy in relation to recommendation 5]