

feedback notes. The feedback note can in turn help to ensure that lessons are learnt, an integral part of the new process.

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## Economics notes

# Converting international cost effectiveness data to UK prices

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To facilitate decision making the Department of Health commissioned a systematic review of all published economic evaluations (not just UK studies) with a view to constructing an economic evaluation database.<sup>1</sup> This systematic approach has been influenced by the Cochrane style systematic review process of clinical evaluations and is a progression from the widely publicised "QALY league table" approach. A QALY (quality adjusted life year) league table ranks interventions according to the extra cost per extra quality adjusted life year gained. Ideally this approach should help direct health care resources to those interventions which produce the most QALYs for the least cost. However, economic data are often specific to time and place, and extrapolation of economic results between localities and especially between countries should be treated with extreme caution. We aim here to show that the uncertainty over only one aspect of translating and interpreting non-UK evaluations—currency conversion factors—makes the use of foreign evaluations in UK health care decision making unreliable.

At present it is uncertain which is the best method of converting international cost data into UK prices. Exchange rates are unsatisfactory because they can vary considerably within the space of a few months. To avoid this, and other methodological problems of exchange rates, purchasing power parities (PPPs) are used to convert the costs of goods and services which are priced in different currencies to UK costs. PPPs relate to the prices of the same basket of goods in different countries and

can eliminate some of the drawbacks of using exchange rates. However, it is unclear which type of PPP, health service specific or related to gross domestic product (GDP), is the more appropriate conversion method. If £1.50 bought the same goods and services in the UK as \$1 does in the United States this would result in a GDP PPP of 1.5. Health PPPs are calculated using only the prices of a basket of health related goods and services whereas GDP PPPs are based on the prices of a basket of all goods in the economy. Previous attempts to establish the stability of either health PPP or GDP PPP conversion factors have reached different conclusions.<sup>2,3</sup> The Department of Health register of cost effectiveness studies<sup>1</sup> recommends the use of GDP PPPs, though others argue that the choice makes no difference.<sup>4</sup>

In the table we show the results of converting a number of economic evaluations<sup>5-12</sup> of hormone replacement therapy identified in a recent systematic review.<sup>15</sup> Though each study contained several different scenarios of use of hormone replacement therapy and different types of patients, we show just two scenarios: 10 years of use for symptomatic women and 10 years of use for asymptomatic women (all studies used similar measures of health gain). As the table shows, different conversion methods give very different cost utility ratios, with a considerable range in results. A UK study<sup>5</sup> is included for comparison. The difficulty with respect to UK decision making is: which is the right answer? There is, as yet, no consensus among health economists on this question.

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Variation in estimates of symptomatic and asymptomatic women costs after converting from non-UK to UK using three conversion methods\*

Study	Symptomatic women cost per QALY†				Asymptomatic women cost per QALY†			
	Original prices	Health PPPs‡	GDP PPPs‡	Exchange rates	Original prices	Health PPPs‡	GDP PPPs‡	Exchange rates
Daly et al 1992 <sup>5</sup>	6 200	6 200	6 200	6 200	14 400	14 400	14 400	14 400
Weinstein 1980 <sup>6</sup>	US\$7 420	6 482	9 816	4 509	Dominated			
Weinstein and Schiff 1983 <sup>7</sup>	US\$17 000	11 201	16 962	10 331	US\$38 825	25 582	38 738	23 595
Weinstein and Tosteson 1990 <sup>8</sup>	US\$16 700	9 109	13 794	10 149	US\$24 000	13 091	19 824	14 586
Tosteson and Weinstein 1991 <sup>9</sup>	US\$14 940	7 387	11 185	9 080	US\$33 780	16 701	25 291	20 529
Cheung and Wren 1992 <sup>10</sup>	\$A15 000	25 889	30 169	7 060	\$A83 600\$	144 286	168 145	39 349
Tosteson et al 1990 <sup>11</sup>	Not undertaken				US\$26 255\$	14 893	22 553	15 956
Geelhoed et al 1994 <sup>12</sup>	Not undertaken				\$A40 272\$	58 154	67 770	18 955
Range		1 750-25 889	1 750-30 169	1 750-10 331		13 091-144 286	14 400-168 145	14 400-39 349

\*Costs were inflated to 1990 prices using domestic inflation rates, converted to 1990 UK prices using one of the conversion methods and then inflated to 1992 prices using the Health Service Pay and Prices Index.<sup>13</sup> All costs in UK sterling for 1992.

†Only women with intact uterus.

‡PPPs were obtained from OECD.<sup>14</sup>

§15 years' use.

This uncertainty is compounded by the differences between countries in the amount, productivity, and price of resources used to provide health care. For example, countries may use different numbers and types of staff, with widely varying pay scales and costs, to deliver the same quality of life improvements in women receiving hormone replacement therapy. A better method of using non-UK evaluations may be to derive UK costs based on reported physical units of resources used rather than convert costs using currently available techniques. However, this will tend only to reduce uncertainty due to problems with conversion factors, not remove it altogether.

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### One hundred years ago Rudolf Virchow

RUDOLPH VIRCHOW is dead. The hero who for the past twenty years has held undisputed pre-eminence in the realm of science is now translated to the Valhalla of his peers. His was the last great figure remaining to us of those who carried the torch of honest inquiry into the dark places of traditional dogma and mediaeval superstition. The universal reverence of mankind was his reward. This universality of recognition is the highest of all testimonies to the greatness of the man, for the ordinary layman is ignorant of the very meaning of the word pathology, one of the few branches of science which has not been made accessible to him by the facile effusions, so beloved in England, of the untrained amateur. It is hard indeed for a medical man, or even an expert pathologist of to-day, to realize to the full Virchow's services to pathology. We owe to him not alone the direction which his study has taken during the last half century, but the very symbols in which its language is written. The first names which the student of the science of medicine has to learn were coined by Virchow to designate appearances which he either discovered or

was the first to appreciate correctly. But this was only a small part of his work. He it was who recognized that the great laws of biology apply in disease as well as in health. Science is the knowledge of or the attempt to know the causes of things; it was Rudolf Virchow's life-work to show that the causes of disease are, equally with the functions of the normal animal accessible to rigid inquiry.

What qualifications did this great man bring to his work? What qualities enabled him, alone and unaided, save by the pupils whom he had trained to carry the banner of pathology from the slough of academical speculation of "free-cell formation" and the study of "humours" to the firm ground of Science and the base of the mountain of Truth? First of all absolute honesty. The very truth was the primary and the ultimate object of his search. Unprejudiced by the authority of his predecessors or the doubts his contemporaries, free in himself from all cramping preconceptions, he set out resolutely to observe and frankly to record the biological phenomena of disease. (*BMJ* 1902;ii:803)