Technical details of our methodology and analysis assessing the impact and value of health research in Wales

September 2020

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Contents

A1.1 Introduction

This appendix document sets out the technical details of the methodology and analysis undertaken for KPMG's report assessing the economic impact and value generated through the health research activity undertaken by the life sciences industry in Wales, the delivery of health research on the Health and Care Research Wales Portfolio (the "Portfolio"), and the role of the Health and Care Research Wales Support and Delivery Service (the "S&D Service") in supporting this research, specifically focussing on the research supported by NHS organisations in Wales, rather than the wider Health and Care Research Wales infrastructure.

This document should be read in conjunction with our report 'Impact and value of research supported by NHS organisations in Wales', September 2020, which sets out full details of our scope of work, along with the findings of our analysis.

A1.2 Approach to estimating GVA and employment impacts

Our analysis of the economic impact was conducted in line with methodologies set out in HM Treasury's The Green Book: Appraisal and Evaluation in Central Government.[1]

The health research activity supported by NHS organisations directly adds GVA and employment to the Welsh and, more widely, to the UK economy through productive use of inputs, including employment of labour and use of products and services within NHS organisations, other care providers, universities, sponsor companies, CROs and within the S&D Centre, to deliver health research activity.

In our analysis we assess the economic impact of health research activity supported by the NHS organisations in terms of direct, indirect and induced GVA and direct, indirect and induced employment (which is reported in terms of FTEs.

The analysis covers the economic impacts, in terms of GVA and employment, associated with the following health research activities in Wales:

— **S&D Centre:** Impacts generated by the S&D Centre - part of the S&D Service - which supports both commercial and non-commercial health research on the Portfolio.

— **Non-commercial research:** Impacts generated by Universities and principal investigators associated with their initiation of non-commercial health research funded by charities and other non-commercial funders; and by NHS R&D departments and Research Delivery Staff, funded by the S&D Service, through their delivery of non-commercial health research on the Portfolio, funded by charities and other non-commercial funders.

— **Commercial research:** Impacts generated by life sciences industry sponsor companies and CROs associated with their undertaking healthcare research activity in Wales and initiating and funding commercial health research; and by NHS organisations and other care providers associated with their delivery of commercial health research on the Portfolio, funded by the life sciences industry.

Our approach to estimating the economic impacts associated with each of these groups differs slightly, both due to data availability and differences in the nature of the activities. Our approach to estimating the economic impacts are detailed below.

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[1] HM Treasury (2018), The Green Book, See: https://www.gov.uk/government/publications/the-green-book-appraisal-and-evaluation-in-central-governent

A1.2.1 GVA and employment impacts of non-commercial grant funded health research on the Portfolio

Approach to estimating GVA

Direct GVA at the industry or organisational level can be measured through either the income approach or the production approach.[2] Based on the data available to us, we have adopted the income approach in our analysis, where:

$$Direct\ GVA = Net\ pre-tax\ profit + Compensation\ of\ Employees + Depreciation + Amortisation$$

Given that the grant funded health research undertaken by universities, academic clinical trials units, PIs within NHS organisations and some charities is non-commercial in nature, for the purposes of our analysis we have assumed that it is not profit making. We therefore use payroll costs (compensation of employees) as our estimate of direct GVA. For these costs, we used the data on health research grants payments by type of activity for FY 2018/19, sourced from the UKCRC[3].

Using the latest available UKCRC data (from 2018) we filtered the total grant payments for health research by research activities relating to staff costs only. The following research activity codes[4] were used to filter the data:

— 3.1-3.4, 'Prevention', all except for Resources and Infrastructure

— 4.2, 'Detection and Diagnosis': Evaluation of markers and technologies

— 4.4, 'Detection and Diagnosis': Population screening

— 5.1-5.8, 'Treatment Development', all except for Resources and infrastructure

— 6.1-6.8, 'Treatment Evaluation', all except for Resources and infrastructure

— 7.1-7.3, 'Disease Management', all except for Resources and infrastructure

— 8.1-8.4, 'Health Services', all except for Resources and infrastructure

We also filtered the data to include only:

— grants awarded in FY 2018/19;

— grants awarded in Wales.

This yielded the total grants awarded for FY 2018/19 relating to staff costs for all health research in Wales.

In order to estimate the GVA and employment impacts of non-commercial grant funded health research activity supported by NHS organisations in FY 2018/19 we adjusted the results for the proportion of all health research in Wales that is on the Portfolio, based on data obtained from the ten NHS organisations[5]. This data indicated that, on average, 79% of all non-commercial health research studies are part of the Portfolio.

The indirect GVA was estimated as:

$$Indirect\ GVA = Direct\ GVA\ x\ (sector\ specific\ Type\ I\ GVA\ multiplier^6 - 1)$$

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[2] ONS, 'Measuring the economic impact of an intervention, Paper One', 2010. Available from: http://webarchive.nationalarchives.gov.uk/20160105160709/http://ons.gov.uk/ons/rel/regional-analysis/measuring-the-economic-impact-of-an-intervention-or-investment/measuring-the-economic-impact-of-an-intervention-or-investment/economic-impact--paper-one.pdf
[3] UKCRC Health Research Classification System. See: https://hrcsonline.net/research-activities/
[4] The S&D Centre provided details of which research activity codes should be used in our analysis.
[5] We requested data on the number of Portfolio and non-Portfolio studies from NHS organisations.
[6] ONS, 2016 Input-Output Analytical Tables, Multipliers and effects

The induced GVA was estimated as:

$$Induced\ GVA = \big[Direct\ GVA\ x\ (sector\ specific\ Type\ II\ GVA\ multiplier^{[7]} - 1)\big]$$
$$- \big[Direct\ GVA\ x\ (sector\ specific\ Type\ I\ GVA\ multiplier^{[8]} - 1)\big]$$

The sector specific Type I and Type II GVA multipliers for SIC code 72, which relates to 'Scientific research and development services'[9], were used.

Approach to estimating employment

The direct employment impacts, in FTE terms, were derived from the estimated the direct GVA estimate based on the average GVA per employee for SIC code 72, 'Scientific research and development services'[10] that we estimated based on GVA and employment data sourced from the ONS[11]

$$Direct\ FTE\ employment = \frac{Direct\ GVA}{sector\ average\ GVA\ per\ FTE}$$

The indirect employment was estimated as:

$$Indirect\ employment = Direct\ employment\ x\ (sector\ specific\ Type\ I\ employment\ multiplier^{[12]} - 1)$$

The induced employment was estimated as:

$$Induced\ employment$$
$$= \big[Direct\ employment\ x\ (sector\ specific\ Type\ II\ employment\ multiplier^{[13]} - 1)\big]$$
$$- \big[Direct\ employment\ x\ (sector\ specific\ Type\ I\ employment\ multiplier^{[14]} - 1)\big]$$

Type I and Type II employment multipliers for SIC code 72 were used.

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[7] Scottish Government Type II, output, income, employment and GVA multipliers Scotland 1998-2016 (SIC 2007 basis). See:
https://webarchive.nrscotland.gov.uk/20191011015753/https://www2.gov.scot/Topics/Statistics/Browse/Economy/Input-Output/Downloads/IO1998-2016L2
[8] Scottish Government Type I, output, income, employment and GVA multipliers Scotland 1998-2016 (SIC 2007 basis). See:
https://webarchive.nrscotland.gov.uk/20191011015750/https://www2.gov.scot/Topics/Statistics/Browse/Economy/Input-Output/Downloads/IO1998-2016L1
[9] ONS, 2009. UK Standard Industrial Classification of Economic Activities 2007 (SIC 2007). See:
https://www.ons.gov.uk/file?uri=/methodology/classificationsandstandards/ukstandardindustrialclassificationofeconomicactivities/uksic2007/uksic2007web.pdf
[10] ONS, 2009. UK Standard Industrial Classification of Economic Activities 2007 (SIC 2007). See:
https://www.ons.gov.uk/file?uri=/methodology/classificationsandstandards/ukstandardindustrialclassificationofeconomicactivities/uksic2007/uksic2007web.pdf
[11] To estimate the sector average GVA per employee, in FTE terms, we had to first estimate the number of FTEs for each SIC code as the ONS does not publish FTE breakdown by industry. We estimated this using total employment figures from the ONS Business Register and Employment Survey 2014, which states both full-time and part-time employment figures which was converted to FTE using an FTE conversion factor based on the average number of hours work per week by part-time workers sourced from the ONS. This figure was then used to estimate the GVA per FTE.
[12] ONS 2016 Input-Output Analytical Tables, Multipliers and effects. Available at:
https://www.ons.gov.uk/economy/nationalaccounts/supplyandusetables/datasets/ukinputoutputanalyticaltablesdetailed
[13] ONS 2016 Input-Output Analytical Tables, Multipliers and effects. Available at:
https://www.ons.gov.uk/economy/nationalaccounts/supplyandusetables/datasets/ukinputoutputanalyticaltablesdetailed
[14] Scottish Government Type I, output, income, employment and GVA multipliers Scotland 1998-2016 (SIC 2007 basis). See:
https://webarchive.nrscotland.gov.uk/20191011015750/https://www2.gov.scot/Topics/Statistics/Browse/Economy/Input-Output/Downloads/IO1998-2016L1

A1.2.2 GVA and employment impacts of non-commercial health research activity on the Portfolio delivered by NHS organisations

Approach to estimating GVA

The direct GVA impact generated by non-commercial health research activity on the Portfolio delivered by NHS organisations and other care providers was also estimated using the income approach, again assuming that the activity is not profit making due to it being non-commercial in nature. The S&D Centre provided payroll cost data for the NHS R&D departments and the Research Delivery Staff for FY 2018/19.

The indirect and induced GVA was estimated using the Type I and Type II GVA multipliers for SIC code, 86, which relates to 'Human health services'[15], following the same approach as outlined in Section A1.2.1.

Approach to estimating employment

Data was provided by the S&D Centre on the number of FTE employees of the NHS R&D departments and the Research Delivery Staff. This was used for the direct employment impacts.

The indirect and induced employment was estimated using the Type I and Type II employment multipliers for SIC code, 86, which relates to 'Human health services'[16], following the same approach as outlined in Section A1.2.1..

A1.2.3 GVA and employment impacts of commercial health R&D activity undertaken by the life sciences industry

Approach to estimating GVA

We were unable to obtain data directly from pharmaceutical companies and CROs for our analysis. We therefore drew on the ONS UK Business Enterprise Research and Development (BERD) dataset for 2018,[17] specifically, the data on total R&D expenditure and R&D expenditure on payroll costs for the pharmaceutical sector.

This R&D expenditure data captures all types of R&D activity (including non-health research related spend) for the whole of the UK. Therefore, to estimate R&D payroll cost expenditure for life science industry health research in Wales, we transformed the data by:

— applying the proportion of total UK R&D expenditure that is undertaken in Wales, 1.7% in 2018, sourced from the ONS BERD;

— applying the proportion of pharmaceutical R&D expenditure that is spent on health research, 51.4%, sourced from the ABPI[18]; and

— uplifting the estimate to include health research involving medical devices, rather than just pharmaceutical health research, based on the proportion of commercial studies on the Portfolio[19] that are medical device studies (13%).

[15] ONS 2009. UK Standard Industrial Classification of Economic Activities 2007 (SIC 2007). See: https://www.ons.gov.uk/file?uri=/methodology/classificationsandstandards/ukstandardindustrialclassificationofeconomicactivities/uksic2007/uksic2007web.pdf
[16] ONS 2009. UK Standard Industrial Classification of Economic Activities 2007 (SIC 2007). See: https://www.ons.gov.uk/file?uri=/methodology/classificationsandstandards/ukstandardindustrialclassificationofeconomicactivities/uksic2007/uksic2007web.pdf
[17] ONS 2019, Business enterprise research and development, UK: 2018. See: https://www.ons.gov.uk/economy/governmentpublicsectorandtaxes/researchanddevelopmentexpenditure/datasets/ukbusinessenterpriseresearchanddevelopment
[18] ABPI 2017, See: https://www.abpi.org.uk/facts-and-figures/science-and-innovation/global-pharmaceutical-rd-expenditure-along-the-development-cycle/
[19] The S&D Centre provided this figure in March 2020.

This allowed us to estimate the total payroll costs associated with healthcare research activity in Wales undertaken by sponsor companies and CROs in FY 2018/19.

We also include a profit element as part of our GVA calculation, based on the estimated return on investment[20] of the pharmaceutical health research sector for 2018 and the total R&D expenditure in the pharmaceutical sector in 2018.

We summed the total estimated payroll costs and profit to estimate the direct GVA associated with NHS organisations- supported commercial health research activity undertaken by sponsor companies and CROs.

We estimated the indirect and induced effects using the same approach as previously described in Section A1.2.1, using GVA multipliers for SIC code 72, 'Scientific research and development services.[21]

Approach to estimating employment

We sourced FTE employment data relating to R&D in the UK pharmaceuticals sector from the ONS[22] for 2018. We adjusted this figure in the same way as for payroll costs, to capture only the effect of clinical studies in Wales on the Portfolio and to also include medical device studies. This provided us with a direct employment estimate.

We calculated indirect and induced employment effects using the same approach as described in Section A1.2.1 using multipliers for SIC code 72, 'Scientific research and development services.[23]

A1.2.4   GVA and employment impacts of commercial health research activity delivered by NHS organisations

We estimated the economic impact associated with commercial studies undertaken within NHS organisations using the data provided on staff hours and costs paid by sponsor companies for the delivery of commercial studies by NHS organisations. Specifically, we received the staff costs from eight NHS organisations in Wales that undertook commercial studies on the Portfolio in FY 2018/19.

As highlighted in Section 2.4 of the main report, data received from NHS organisations on staff hours and costs associated with commercial studies open to recruitment in FY 2018/19 differed in terms of completeness and granularity across NHS organisations.

For the four NHS organisations that provided study-level data on per-patient staff costs and hours dedicated to all commercial studies undertaken at their NHS organisation in FY 2018/19, we used the number of patients recruited in each study to estimate the staff costs and hours dedicated to commercial studies at their NHS organisations.

Three NHS organisations, however, provided study-level data (directly extracted from the costing templates) on per-patient staff costs and hours dedicated to the majority of commercial studies undertaken (57%, 90%, and 95% respectively). This data had to be scaled up, based on the number of patients recruited, to estimate the total staff costs and hours dedicated to all commercial studies

[20] Deloitte 2018, Unlocking R&D productivity: Measuring return from pharmaceutical innovation. See: https://www2.deloitte.com/us/en/pages/life-sciences-and-health-care/articles/measuring-return-from-pharmaceutical-innovation.html
[21] ONS 2009. UK Standard Industrial Classification of Economic Activities 2007 (SIC 2007). See: https://www.ons.gov.uk/file?uri=/methodology/classificationsandstandards/ukstandardindustrialclassificationofeconomicactivities/uksic2007/uksic2007web.pdf
[22] See table 'Employment in R&D performed in UK businesses: detailed product groups' 2018.
[23] ONS 2009. UK Standard Industrial Classification of Economic Activities 2007 (SIC 2007). See: https://www.ons.gov.uk/file?uri=/methodology/classificationsandstandards/ukstandardindustrialclassificationofeconomicactivities/uksic2007/uksic2007web.pdf

undertaken at their NHS organisation. To do this we estimated the weighted average per patient staff costs and hours as: [24]

$$Weighted\ average\ per\ patient\ staff\ costs\ (hours)$$
$$= \frac{Per\ patient\ staff\ costs\ (hours) * Number\ of\ patients\ recruited\ in\ study}{Total\ number\ of\ patients\ recruited\ at\ the\ NHS\ Organisation}$$

We then estimated the staff costs and hours dedicated to the delivery of those commercial studies for which we did not receive study-level data, by multiplying the weighted average per-patient staff costs to the number of patients recruited in those studies.

$$Missing\ studies'staff\ costs\ (hours)$$
$$= Weighted\ average\ per\ patient\ staff\ costs\ (hours)\ at\ NHS\ Oranisation$$
$$* Number\ of\ patients\ recruited\ in\ study$$

We then estimated the staff costs and hours dedicated to commercial studies at these three NHS organisations following the same approach used to estimate the staff costs and hours dedicated to commercial studies at the four NHS organisations which provided complete per-patient data.

Finally, one other NHS organisation provided an estimate for total staff costs and hours dedicated to commercial studies.

We then summed the total staff costs and hours at each NHS organisation and estimated the total staff costs paid in Wales for the delivery of commercial studies in FY 2018/19.

Approach to estimating GVA

Given that the NHS is non-profit making and we did not have data on depreciation and amortisation, using the income approach to estimation of GVA we proxied the direct GVA as the total staff costs (estimated as explained above).

We estimated the indirect and induced GVA using the approach set out in Section A1.2.1, using GVA multipliers for SIC code 86, 'Human health services'[25].

Approach to estimating employment

To estimate the direct employment impact, in FTE terms, we used the information received by eight NHS organisations on the staff hours dedicated to commercial health research in FY 2018/19.

The staff hours were then converted to FTEs by dividing the total number of staff hours dedicated to commercial health research by total number of hours a FTE would work in a year.[26]

$$FTE = \frac{Total\ staff\ hours}{7.5\ working\ hours\ per\ day * 220\ working\ days\ a\ year}$$

We estimated the indirect and induced employment using the approach set out in Section A1.2.1, using employment multipliers associated with SIC code 86, 'Human health services'[27].

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[24] For simplicity, the equations will show the formulas to estimate staff costs, but the same methodology can be followed to estimate staff hours.
[25] ONS 2009. UK Standard Industrial Classification of Economic Activities 2007 (SIC 2007). See:
https://www.ons.gov.uk/file?uri=/methodology/classificationsandstandards/ukstandardindustrialclassificationofeconomicactivities/uksic2007/uksic2007web.pdf
[26] The costing templates provided indicate that a Full Time Equivalent works 37.5 hours for 220 days a year.
[27] ONS 2009. UK Standard Industrial Classification of Economic Activities 2007 (SIC 2007). See:
https://www.ons.gov.uk/file?uri=/methodology/classificationsandstandards/ukstandardindustrialclassificationofeconomicactivities/uksic2007/uksic2007web.pdf

A1.2.5 GVA and employment impacts of impacts of the Support & Delivery Centre

Approach to estimating GVA

We used payroll cost data, sourced from the S&D Centre, relating to the S&D Centre for FY 2018/19, as our estimate of direct GVA.

We estimated the indirect and induced GVA using the approach set out in Section A1.2.1, using GVA multipliers associated with SIC code 84, 'Public Administration And Defence; Compulsory Social Security (Non-market)'.[28]

Approach to estimating employment

We used data provided by the S&D Centre on the number of FTE employees within the S&D Centre for the direct employment impacts.

We estimated indirect and induced employment using the approach set out in Section A1.2.1, using employment multipliers associated with SIC code 84, 'Public Administration And Defence; Compulsory Social Security (Non-market)'[29].

A1.3 Approach to estimating the monetary impact on the NHS

A1.3.1 Approach to estimating commercial payments to NHS Trusts

We received study-level data on per patient payments, therapeutic area, and number of patients for studies conducted in FY 2018/19 from the seven NHS organisations which undertook commercial studies recruiting at least one patient in FY 2018/19.

In total we received 'per patient payment' data for 119 studies.

To estimate the total payments for the delivery of commercial studies in FY 2018/19, we used a similar approach to that described in section A1.2.4 to estimate total staff costs and hours dedicated to delivering commercial studies at each NHS organisation.

As detailed in section A1.2.4, three NHS organisations provided study-level data (directly extracted from the costing templates) on per-patient payments dedicated to the majority of commercial studies undertaken (57%, 90%, and 95% respectively). This data had to be scaled up, based on the number of patients recruited, to estimate the total staff costs and hours dedicated to commercial studies undertaken in FY 2018/19.

Following the same steps used to estimate the staff costs and hours dedicated to the delivery of commercial studies, we estimated the total payments to the NHS organisations for the delivery of commercial studies in FY 2018/19.

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[28] ONS 2009. UK Standard Industrial Classification of Economic Activities 2007 (SIC 2007). See:
https://www.ons.gov.uk/file?uri=/methodology/classificationsandstandards/ukstandardindustrialclassificationofeconomicactivities/uksic2007/uksic2007web.pdf
[29] ONS 2009. UK Standard Industrial Classification of Economic Activities 2007 (SIC 2007). See:
https://www.ons.gov.uk/file?uri=/methodology/classificationsandstandards/ukstandardindustrialclassificationofeconomicactivities/uksic2007/uksic2007web.pdf
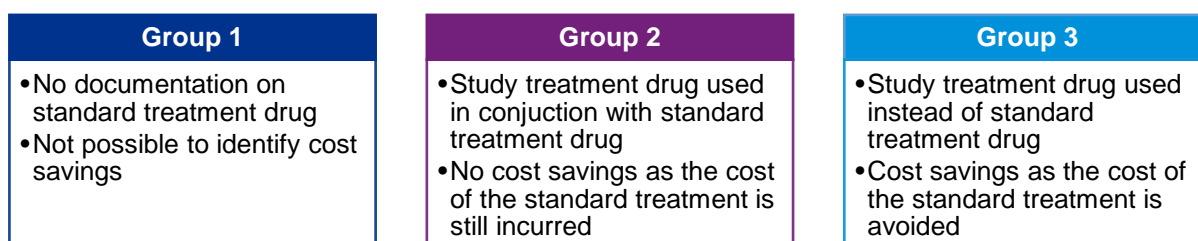
A1.3.2   Approach to estimating the pharmaceutical cost saving to the NHS

As detailed in Section 3.2 of the main report, as well as payments to NHS organisations for conducting commercial studies, there are other monetary benefits in the form of cost savings through the provision of pharmaceutical products by sponsor companies for health research.

These cost savings are applicable for a subset of industry-sponsored interventional studies using drug-products. Specifically, cost savings to the NHS from these studies are realised when sponsor companies trial new pharmaceutical products and, as a result, NHS organisations do not incur the cost of the standard treatment.

In order to estimate these direct cost savings, we were provided with data by Health and Care Research Wales that had been extracted from the study protocols for commercial interventional drug studies on the Portfolio, and for those non-commercial studies on the Portfolio, which the NHS organisations had identified as having drugs provided free of charge. These were all studies that were open to recruitment in FY 2018/19. However, not all studies considered resulted in a direct cost saving or one that could be quantified. We categorised the studies into three groups – see Figure A1 below. In some cases, the study drug may be used in conjunction with the standard treatment drug, so the standard treatment cost is still incurred by the NHS (Group 2). In other cases, while there may a cost saving, data was not available to estimate the NHS savings (Group 1). Therefore, in our analysis we focussed only on those studies where the use of the study treatment drug replaced the use of the standard treatment drug and documentation was available to inform the analysis (Group 3).

Figure A1: Groups of studies considered for the direct cost saving analysis

Group 1	Group 2	Group 3
• No documentation on standard treatment drug • Not possible to identify cost savings	• Study treatment drug used in conjuction with standard treatment drug • No cost savings as the cost of the standard treatment is still incurred	• Study treatment drug used instead of standard treatment drug • Cost savings as the cost of the standard treatment is avoided

Source: KPMG analysis.

The S&D Centre team extracted data and information from study protocols for all 85 commercial interventional studies on the Portfolio in FY 2018/19, as well as for 72 non-commercial studies which the NHS organisations identified as providing drug free of charge. This information covered the standard treatment drug that would otherwise have been provided to the patient and information relating to the maximum dosage and the duration of treatment. We then used external databases[30] (see Table A2 below for details) to extract information on the price for the standard treatments and estimated the NHS cost saving per patient on the relevant studies.

Table A1 below shows the total number of studies in the sample of data available and how these were distributed across the treatment groups presented in Figure A1. Based on our analysis we estimate that drugs were provided free of charge, in place of the standard treatment (Group 3), in around 24% of commercial studies on the Portfolio, and 6% of non-commercial studies on the Portfolio[31].

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[30] The EMC database to gather information on treatment dosage, and the NICE BNF database to gather pricing information. See: https://www.medicines.org.uk/emc and https://bnf.nice.org.uk/drug/
[31] The percentages are estimated based on the number of studies on the Portfolio which recruited at least one patient in FY 2018/19.
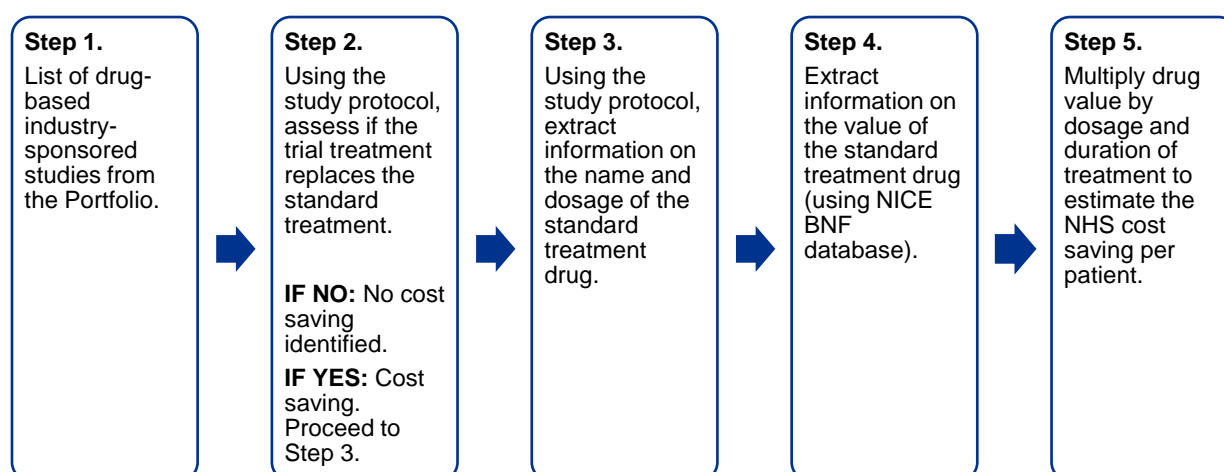
Table A1: Breakdown by type of study for those studies resulting in a cost saving to the NHS (Group 3), for commercial and non-commercial studies

Type of study	Number of interventional studies on the Portfolio recruiting at least one patient in FY 2018/19	Of which drug studies providing drugs free of charge	Group 1 – no standard treatment	Group 2 – standard treatment + study treatment	Group 3 – standard treatment instead of study treatment
Commercial	85	85%	35%	26%	24%
Non-commercial	212	33%	9%	17%	6%

Source: KPMG analysis. Raw data extracted from study Protocols by the S&D Centre and later analysed by KPMG.

For those studies classified as being in Group 3, the S&D Centre extracted information from the study protocol on the name of the standard treatment drug, the maximum dosage and the duration of treatment. We then used NICE BNF, a pricing database for pharmaceutical products, to extract information on the price for the standard treatments. If information on the dosage and duration and treatment was not available from the study protocol this was sourced from the emc database. The steps taken to estimate the NHS cost savings are set out below.

Figure A2: Steps taken to estimate the NHS cost saving per study

Step 1.
List of drug-based industry-sponsored studies from the Portfolio.

Step 2.
Using the study protocol, assess if the trial treatment replaces the standard treatment.

IF NO: No cost saving identified.
IF YES: Cost saving. Proceed to Step 3.

Step 3.
Using the study protocol, extract information on the name and dosage of the standard treatment drug.

Step 4.
Extract information on the value of the standard treatment drug (using NICE BNF database).

Step 5.
Multiply drug value by dosage and duration of treatment to estimate the NHS cost saving per patient.

Source: KPMG analysis

Table A2: Sources of information used to estimate drug values

Databases used for data extraction	
NICE BNF database	**Pricing database for pharmaceutical products**
	This database contains pricing information for pharmaceutical products in the UK. It is searchable based on active ingredient, brand name or by manufacturer / distributor. It returns information on the quantity, unit and price in GBP (both NHS indicative price and the Drug tariff price).
emc database	**Prescribing information for licensed medicines**
	This database contains up-to-date information on prescribing information for licensed medicines. It draws on summaries of product characteristics and patient information leaflets.
	This database is used if the study protocol did not contain information on maximum dosage and/or duration of treatment for the named standard treatment drug.

Source: Available at https://bnf.nice.org.uk/ and http://www.medicines.org.uk/emc/

We used the data extracted for the relevant commercial and non-commercial studies to estimate the drug cost saving for each study. We then summed the study-level drug cost saving across all relevant studies to estimate the total direct cost saving attributable to the provision of free of charge drugs for use in studies in FY 2018/19.

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