

Provisional Quarterly Patient Reported Outcome Measures (PROMs) in England – Data Quality Note

April 2015 to June 2015

Published 12 November 2015



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These statistics are used by health care providers and commissioners to improve the quality of health care offered to patients. Academic researchers use this data to inform research on PROMs-eligible procedures. Patients, carers, and other organisations that support patients (including GP practices and charities) may also find these statistics helpful in making informed decisions about elective procedures and providers.

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Version:	V1.0
Date of publication:	12 November 2015

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Introduction

This data quality note accompanies the latest publication by the Health and Social Care Information Centre (HSCIC) of provisional quarterly data from the Patient Reported Outcome Measures (PROMs) programme, April 2015 - June 2015. Cumulative updates to the 2015 - 2016 publication will be released quarterly¹ until the dataset is finalised in August 2017 and a final annual report released.

The PROMs programme covers NHS England-funded elective inpatient surgery for four common groups of procedures: total hip replacement, total knee replacement, groin hernia repair and varicose vein surgery. Data releases and analyses in this publication are based on:

- Pre-operative questionnaires completed by patients within the reporting period, together with any associated inpatient hospital episodes and post-operative questionnaires (for reporting on key facts, participation and linkage, and headline findings);
- Episodes of inpatient hospital care within the reporting period, which included one of the four surgical procedures eligible for PROMs and associated pre- and post-operative questionnaires (for counts of episodes, and case-mix adjusted reporting).

Full details of the surgeries eligible for inclusion in PROMs are contained in the PROMs Guide, available from the HSCIC's PROMs homepage², which also describes some general data quality and processing issues.

Key points for this issue

Estimated missing episodes: Our estimates suggest that there are currently no missing PROMs-eligible episodes.

Episode counts: Comparative data is not available at this stage.

Average health gains: Comparative data is not available at this stage due to small numbers of post-operative questionnaires received to date for this reporting period.-.

Other quality factors: The datasets used in monthly and quarterly provisional data are incomplete. Numbers of questionnaires and hospital inpatient episodes reported in previous provisional editions may have changed not only because of the receipt of additional data but also as a result of updated clinical coding or delayed submission of questionnaires.

¹ Full publications are planned for quarterly release in August, November, February and May; high-level summaries are released monthly.

² <http://www.hscic.gov.uk/proms>

Relevance

Health providers and commissioners use PROMs publications and statistics to improve the quality of health care offered to patients. A recent case study on PROMs³ found several examples of healthcare providers using PROMs data to inform changes in service delivery, some of which are noted below:

- Northumberland NHS Healthcare Foundation Trust standardised implants and moved away from replacing kneecap surfaces during surgery
- CircleBath used PROMs data to shape their Enhanced Recovery Programme, “revising care pathways, standardising implant and anaesthetic protocols and providing patients with an extra physiotherapy appointment.”
- Derby Hospitals NHS Foundation Trust adapted their post-operative pain relief protocol for knee replacements
- Barnsley Hospital NHS Foundation Trust used PROMs data to provide evidence for the appointment of an additional physiotherapist.

Patients (and others involved in managing patient care such as GPs and carers) can use PROMs data to help decide where to receive treatment in the following ways:

- NHS Choices publishes provider-level outlier data for PROMs-eligible procedures based on the following measures (see ‘Measure completeness’ section of this document for further information):
 - Groin hernia – EQ-5D™ Index;
 - Hip replacement (primary) -- Oxford Hip Score;
 - Knee replacement (primary) – Oxford Knee Score;
 - Varicose vein – Aberdeen Varicose Vein Questionnaire;These data are published as part of a ‘score card’, together with other provider-level data for the procedure.
- HSCIC publishes a Google Map service for all PROMs procedures and measures: users can click on providers to see whether or not they were also outliers in earlier years.

Academic researchers use these data to inform research on PROMs-eligible procedures. Patients, carers and other organisations that support patients (including GP practices and charities) may also find these statistics helpful in making informed choices about elective procedures and providers.

The HSCIC is keen to gain a better understanding of the users of this publication and of their needs; feedback is welcome and may be sent to enquiries@hscic.gov.uk (please include ‘PROMs’ in the subject line). We publish summary information about feedback received and how this has influenced product development in the Annual Report.

³ The HSCIC, “Benefits case study: Patient Reported Outcome Measures (PROMs) outputs”, 2015
<http://www.hscic.gov.uk/benefitscasestudies/proms>

Accuracy

Demographic information

Pre-operative questionnaires collect personal information about the patient's postcode, date of birth and sex. This information is used to support patient-level linkage with HES (other administrative information such as NHS number is also used for data linkage). Table 1 shows that item completeness exceeds 99% for these data items across all procedures.

Measure completeness

Responses to the pre- and post-operative questionnaires are used to report on up to three measures.

General measures

- The EQ-5DTM Index combines five questions about health and quality of life domains (usual activities, self-care, anxiety/depression, pain/discomfort, and mobility) into an overarching measure of general self-reported health. This measure can only be calculated if valid responses are received for all five questions. Table 1 (see below) shows that measure completeness exceeds 90% for all procedures.
- EQ-VAS; a single-item 'thermometer'-style measure which asks patients to rate their general health at the time of completion. Measure completeness on EQ-VAS is lower for hip and knee replacements than for groin hernia and varicose vein procedures (see Table 1).

Condition-specific measures

- The Oxford Hip Score and the Oxford Knee Score are closely related twelve-item questionnaires which combine questions about the patient's specific condition and its impact on their quality of life into a single overarching measure. An overall score on these measures can be calculated if valid responses are present for ten out of the twelve individual items: this represents completeness for analysis purposes.⁴
- The Aberdeen Varicose Vein Questionnaire is constructed from a thirteen-item questionnaire that asks questions about specific elements of the patient's varicose veins. The final score is calculated by dividing the actual score by the maximum possible score for the questions answered so long as no more than two questions have been left unanswered.
- Measure completeness on condition-specific scores is high across all procedures where they are used (see Table 1).

⁴ For more information about each of the measures collected in PROMs questionnaires, and the individual questions that make up the measures, please see the 'Scoring Methodology' section and Annexes 2 and 3 of "Monthly Patient Reported Outcome Measures (PROMs) in England: a guide to PROMs methodology", 2015, http://www.hscic.gov.uk/media/1537/A-Guide-to-PROMs-Methodology/pdf/PROMs_Guide_V8.pdf

Table 1: Measure and item completeness for selected pre- and post- operative questionnaire items and measures, 2015-16 (provisional data)

England	numbers and percentages			
	Groin hernia	Hip	Knee	Varicose vein
Pre-operative questionnaire				
Pre-operative questionnaires	9,965	15,990	18,955	2,750
Postcode populated	9,937	15,985	18,947	2,747
<i>as % of pre-operative questionnaires</i>	<i>99.7</i>	<i>100.0</i>	<i>100.0</i>	<i>99.9</i>
Completed date populated	9,736	15,692	18,539	2,627
<i>as % of pre-operative questionnaires</i>	<i>97.7</i>	<i>98.1</i>	<i>97.8</i>	<i>95.5</i>
Date of birth populated	9,938	15,977	18,935	2,740
<i>as % of pre-operative questionnaires</i>	<i>99.7</i>	<i>99.9</i>	<i>99.9</i>	<i>99.6</i>
Gender	9,936	15,956	18,925	2,740
<i>as % of pre-operative questionnaires</i>	<i>99.7</i>	<i>99.8</i>	<i>99.8</i>	<i>99.6</i>
EQ-5D Index Completeness	9,672	15,044	17,845	2,604
<i>as % of pre-operative questionnaires</i>	<i>97.1</i>	<i>94.1</i>	<i>94.1</i>	<i>94.7</i>
EQ-VAS Completeness	9,572	14,380	16,945	2,544
<i>as % of pre-operative questionnaires</i>	<i>96.1</i>	<i>89.9</i>	<i>89.4</i>	<i>92.5</i>
Condition-specific Completeness	N/A	15,815	18,767	2,651
<i>as % of pre-operative questionnaires</i>	<i>N/A</i>	<i>98.9</i>	<i>99.0</i>	<i>96.4</i>
Pre- and post-operative questionnaire				
Pre- and post-operative questionnaire pairs	2,418	16	11	454
EQ-5D Index Completeness	2,293	15	10	423
<i>as % of questionnaire pairs</i>	<i>94.8</i>	<i>93.8</i>	<i>90.9</i>	<i>93.2</i>
EQ-VAS Completeness	2,312	14	10	416
<i>as % of questionnaire pairs</i>	<i>95.6</i>	<i>87.5</i>	<i>90.9</i>	<i>91.6</i>
Condition-specific completeness	N/A	15	10	435
<i>as % of questionnaire pairs</i>	<i>N/A</i>	<i>93.8</i>	<i>90.9</i>	<i>95.8</i>

Data linkage

The HSCIC links pre-operative PROMs questionnaires to administrative data about the related inpatient hospital procedure held in the Hospital Episodes Statistics: Admitted Patient Care dataset (HES: APC). This is because HES: APC contains a range of variables (such as the Indices of Multiple Deprivation 2010) that are used in the PROMs case-mix adjustment methodology. Whilst PROMs records that cannot be linked with HES: APC episodes are used in much of our reporting, only records that link to HES: APC can be used to make comparisons between provider-level and England-level outcomes.

When linking to HES: APC, matching rules are used to identify and rank potential matches between pre-operative questionnaires and hospital episodes.⁵ Three kinds of error may be introduced during linkage:

- A questionnaire may be linked to an unrelated episode. This is rare as it can only happen when a patient has two or more PROMs-eligible procedures within a very short space of time (for example, a primary procedure, followed shortly after by an elective revision procedure).
- A questionnaire may not link successfully to a related episode. This is more common and can have a number of different causes such as poorly written or incorrect identifiers on the PROMs questionnaire or poorly coded HES episodes
- Very rarely, a questionnaire may be linked to the wrong patient: this could potentially happen if two patients with the same sex, date of birth (where this is not 1 February) and postcode had the same PROMs-eligible procedure at the same hospital within a short period of time.

Table 2: Participation, linkage and response rates, 2015-16 (provisional data)

England	numbers and percentages			
	Groin hernia	Hip	Knee	Varicose vein
Pre-operative questionnaires	9,965	15,990	18,955	2,750
Pre-operative questionnaires to which NHS number	9,135	14,759	17,314	2,318
<i>as % of pre-operative questionnaires</i>	91.7	92.3	91.3	84.3
Pre-operative questionnaires linked to episode	7,199	12,906	13,690	2,262
<i>as % of pre-operative questionnaires</i>	72.2	80.7	72.2	82.3
Post-operative questionnaires issued	4,797	252	295	1,499
Post-operative questionnaires returned	2,418	16	11	454
<i>as % of post-operative questionnaires issued</i>	50.4	6.3	3.7	30.3
<i>as % of pre-operative questionnaires</i>	24.3	0.1	0.1	16.5
Pre- and post-operative questionnaire pair linked to	2,417	16	11	453
<i>as % of pre-operative questionnaires</i>	24.3	0.1	0.1	16.5
<i>as % of all pre-operative questionnaires linked to an</i>	33.6	0.1	0.1	20.0

⁵ For more information about how pre-operative questionnaires are linked to HES episodes, please see the 'Matching methodology' section of "Monthly Patient Reported Outcome Measures (PROMs) in England: a guide to PROMs methodology", 2015, http://www.hscic.gov.uk/media/1537/A-Guide-to-PROMs-Methodology/pdf/PROMs_Guide_V8.pdf
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Non-respondent analysis

Non-respondent analysis is produced for finalised datasets only, with the latest non-respondent analysis made in August 2015.⁶ Non-respondent analysis is based on episode counts within the reporting period and their associated pre- and post-operative questionnaires (pre- and post-operative questionnaires that do not link to an episode are not included in this analysis).⁷

In 2013/14, more than half of all patients undergoing elective hip (58.2%) and knee (57.2%) replacement procedures completed both pre- and post-operative questionnaires, both of which are an increase on the completion rates of both questionnaires in 2012/13 (53.8% and 54.3% respectively). Markedly lower proportions of groin hernia (31.8%) and varicose vein (19.2%) patients undergoing elective treatment in 2013/14 completed both questionnaires. This is a decrease on response rates in 2012/13 (32.4% and 20.2% respectively).

Table 3: Patient engagement levels by procedure, final 2013-14 PROMS data

England, 2013/14	<i>numbers and percentages</i>						
	<i>All episodes of which having:</i>						
	No linked questionnaires		Pre-operative questionnaire only		Pre- and post-operative questionnaire		
	(n)	(n)	%	(n)	%	(n)	%
Groin hernia	73,229	40,706	55.6	9,207	12.6	23,316	31.8
Hip replacement	76,576	21,961	28.7	10,067	13.1	44,548	58.2
Knee replacement	79,769	23,794	29.8	10,343	13.0	45,632	57.2
Varicose vein	26,201	17,422	66.5	3,738	14.3	5,041	19.2

Statistics for groin hernia and varicose veins may, therefore, be more affected by systematic patterns of non-response than those for hip and knee replacements. Many of the factors which are associated with systematic variations in engagement levels (such as higher levels of deprivation, for example), however, are incorporated into the case-mix adjustment methodology. This means that comparisons between provider-level data with England-level results should not be substantially affected.

For further information, please refer to the annual report⁸.

⁶ Non-respondent analysis cannot be produced until the count of PROMs-eligible procedures carried out in the reporting year has been finalised. In addition, post-operative questionnaires for hip and knee replacements are not sent out to patients until six to nine months after their procedures.

⁷ This means that participation and response rates will differ substantially from headline participation rates (the count of pre-operative questionnaires received within the reporting period divided by the count of episodes) published for provisional data, and from other provisional measures of participation and response.

⁸ <http://www.hscic.gov.uk/catalogue/PUB17876>

Patient-provided answers

Most data items are based on answers given by patients themselves. A few data items are system-generated – such as the organisation code for the hospital administering the pre-operative questionnaire.

Questionnaire completion dates

Patients are asked to record when they completed the pre-operative questionnaires, using the format 'dd-mm-yyyy', as seen in the excerpt from a sample questionnaire below.

Figure 1: Questionnaire completion date question from PROMs pre-operative questionnaire⁹

Q26. Today's date

<input type="text"/>							
D	D	M	M	2	0		

Please ensure this **is today's date NOT** your date of birth

This date is used to assign pre-operative questionnaires to reporting periods. Data will only flow from data suppliers to the HSCIC for this item if the date given exists (i.e. '21-03-1066' would flow; '42-56-1066' would not). Once received, HSCIC applies further validation to determine whether or not the date when the data supplier scanned the questionnaire should be used instead of the patient-supplied completion date. The pre-operative questionnaire scan date is used instead of the completion date when the latter is:

- blank (i.e. no date has been supplied, or the date is illegible to both machine and human readers);
- before the PROMs programme started (for example, if they have written in their birth date in error);
- after the date on which the data supplier scanned the questionnaire.

As pre-operative questionnaires are usually scanned within a few weeks of the patient completing the questionnaire, replacing the completion date with the scan date in these cases increases the likelihood of successful linkage to a HES episode. In some cases, the scan date for the pre-operative questionnaire will fall in the reporting period after the pre-operative questionnaire was completed – the impact of this on the statistics is likely to be similar across years.

Despite these cleansing rules, it is likely that some patient-supplied completion dates are written down incorrectly (for example, near the beginning of a year, or due to patients entering dates in mm-dd-yyyy format). As with scan dates above, this may result in the pre-operative questionnaire being assigned to the wrong reporting period: in some circumstances it may also result in the pre-operative questionnaire failing to link successfully to an episode.

Data Quality Monitoring

Summary volume and data-field completeness data is made available monthly to hospital provider organisations and the data processing suppliers to allow them to monitor their data submissions and alert them at an early stage to any issues, such as missing data or emerging data quality problems.

⁹

Estimates of Missing PROMs episodes

The PROMs questionnaire database is routinely linked to the Hospital Episode Statistics ('HES') data warehouse inpatient database in order to provide a richer and broader set of data for analysis. Regularly published HES Inpatient Data Quality Notes¹⁰ identify organisations with shortfalls, missing data or specific data quality issues with their HES inpatient data.

As PROMs-eligible procedures comprise only a small proportion of all HES Inpatient episodes, provider-level estimates of missing PROMs episodes (for organisations identified by HES Inpatient Data Quality Notes as having missing HES inpatient episodes) have been introduced. Details of the estimation method used may be found in Appendix A.

Table 4 shows the Estimated Missing PROMs Episodes for April 2015 to June 2015, using this estimation method.

Table 4: Missing PROMs episodes (estimated), April 2015 - June 2015

Organisation code	Organisation name	Estimated Missing Episodes

Our estimates suggest that there are currently no missing PROMs-eligible episodes.

Mid-Staffordshire NHS Foundation Trust (RJD) is no longer providing health care as of 1 November 2014. Records for this organisation with activity from this date are split between University Hospitals of North Midlands NHS Trust (RJE) and The Royal Wolverhampton NHS Trust (RL4).

It has been decided not to map RJD records to the successor organisations as the Mid Staffordshire NHS Foundation Trust will remain open until a suitable agreement has been made with its stakeholders.

Provisional data

The datasets used in monthly and quarterly provisional data are incomplete. Numbers of questionnaires and hospital inpatient episodes reported in previous provisional editions may have changed not only because of the receipt of additional data but also as a result of updated clinical coding or delayed submission of questionnaires.

In general, provisional counts of questionnaires and hospital records are likely to be lower than will be reported in the final annual publication. Tables 5a to 8b show, for each of the PROMs-eligible procedures, how cumulative data releases affect counts of episodes, pre- and post-operative questionnaire returns, and complete PROMs records (to which the case-mix adjustment model can be applied). The tables also show changes in linkage rates, and in the average scores for each

¹⁰ For further information, please see the coverage table (p.6) HES 2015/16 Month 3 Admitted Patient Care Data Quality Note, available at <http://www.hscic.gov.uk/catalogue/PUB18243/prov-mont-hes-admi-outp-ae-April%202015%20to%20May%202015-inp-qual.pdf>

measure. Average adjusted health gain is included only where the national count of modelled records is 200 or more, consistent with existing publications.

Table 5a: Cumulative data releases for groin hernia, 2015-16: episodes and questionnaires

England, 2015/16		counts, percentages							
Cumulative data releases	Episodes		Pre-operative questionnaires returned		Pre-operative questionnaires linked to an episode		Post-operative questionnaires returned		
	(n)	(Quarterly % change)	(n)	(Quarterly % change)	(n)	(Quarterly % change)	(n)	(Quarterly % change)	
Part-year releases									
Apr 2015 - Jun 2015 (pub. Nov 2015)	17,582	-	9,965	-	7,199	-	2,418	-	
Apr 2015 - Sep 2015 (pub. Feb 2016)	-	-	-	-	-	-	-	-	
Apr 2015 - Dec 2015 (pub. May 2016)	-	-	-	-	-	-	-	-	
Full-year provisional releases									
Apr 2015 - Mar 2016 (pub. Aug 2016)	-	-	-	-	-	-	-	-	
Apr 2015 - Mar 2016 (pub. Nov 2016)	-	-	-	-	-	-	-	-	
Apr 2015 - Mar 2016 (pub. Feb 2017)	-	-	-	-	-	-	-	-	
Apr 2015 - Mar 2016 (pub. May 2017)	-	-	-	-	-	-	-	-	
Final 2015/15 release									
Apr 2015 - Mar 2016 (pub. Aug 2017)	-	-	-	-	-	-	-	-	

As this is the first quarter the data for 2015/16 has been analysed there are no previous data available for change comparisons to be made, however if we look back to the last year, 2014/15 we can see the number of episodes counted at the same quarter was very similar (17,948) showing a consistent episode count in comparison.

Table 5b: Cumulative data releases for groin hernia, 2015-16: modelled records and scores

England, 2015/16		<i>counts, percentages, averages</i>				
Cumulative data releases	EQ-5D™ Index			EQ- VAS		
	Modelled records		Average Health Gain	Modelled records		Average Health Gain
	(n)	(Quarterly % change)		(n)	(Quarterly % change)	
Part-year releases						
Apr 2015 - Jun 2015 (pub. Nov 2015)	3,141	-	0.085	3,179	-	-0.699
Apr 2015 - Sep 2015 (pub. Feb 2016)	-	-	-	-	-	-
Apr 2015 - Dec 2015 (pub. May 2016)	-	-	-	-	-	-
Full-year provisional releases						
Apr 2015 - Mar 2016 (pub. Aug 2016)	-	-	-	-	-	-
Apr 2015 - Mar 2016 (pub. Nov 2016)	-	-	-	-	-	-
Apr 2015 - Mar 2016 (pub. Feb 2017)	-	-	-	-	-	-
Apr 2015 - Mar 2016 (pub. May 2017)	-	-	-	-	-	-
Final 2014/15 release						
Apr 2015 - Mar 2016 (pub. Aug 2017)	-	-	-	-	-	-

Table 6a: Cumulative data releases for hip replacements (primary and revision), 2015-16: episodes and questionnaires

England, 2015/16								counts, percentages	
Cumulative data releases	Episodes		Pre-operative questionnaires returned		Pre-operative questionnaires linked to an episode		Post-operative questionnaires returned		
	(n)	% change	(n)	% change	(n)	% change	(n)	% change	
Part-year releases									
Apr 2015 - Jun 2015 (pub. Nov 2015)	19,317	-	15,990	-	12,906	-	16	-	
Apr 2015 - Sep 2015 (pub. Feb 2016)	-	-	-	-	-	-	-	-	
Apr 2015 - Dec 2015 (pub. May 2016)	-	-	-	-	-	-	-	-	
Full-year provisional releases									
Apr 2015 - Mar 2016 (pub. Aug 2016)	-	-	-	-	-	-	-	-	
Apr 2015 - Mar 2016 (pub. Nov 2016)	-	-	-	-	-	-	-	-	
Apr 2015 - Mar 2016 (pub. Feb 2017)	-	-	-	-	-	-	-	-	
Apr 2015 - Mar 2016 (pub. May 2017)	-	-	-	-	-	-	-	-	
Final 2014/15 release									
Apr 2015 - Mar 2016 (pub. Aug 2017)	-	-	-	-	-	-	-	-	

The number of post-operative questionnaires returned is significantly lower than with Varicose Vein and Groin Hernia procedures, this reflects the longer time delay in issuing these questionnaires to hip replacement patients.

Table 6b: Cumulative data releases for hip replacements (primary), 2015-16: modelled records and scores

England, 2015/16

Cumulative data releases	EQ-5D™ Index			EQ- VAS			Oxford Hip Score		
	Modelled records		Average Health Gain	Modelled records		Average Health Gain	Modelled records		Average Health Gain
	(n)	(Quarterly % change)		(n)	(Quarterly % change)		(n)	(Quarterly % change)	
Part-year releases									
Apr 2015 - Jun 2015 (pub. Nov 2015)	7	-	*	7	-	*	8	-	*
Apr 2015 - Sep 2015 (pub. Feb 2016)	-	-	-	-	-	-	-	-	-
Apr 2015 - Dec 2015 (pub. May 2016)	-	-	-	-	-	-	-	-	-
Full-year provisional releases									
Apr 2015 - Mar 2016 (pub. Aug 2016)	-	-	-	-	-	-	-	-	-
Apr 2015 - Mar 2016 (pub. Nov 2016)	-	-	-	-	-	-	-	-	-
Apr 2015 - Mar 2016 (pub. Feb 2017)	-	-	-	-	-	-	-	-	-
Apr 2015 - Mar 2016 (pub. May 2017)	-	-	-	-	-	-	-	-	-
Final 2014/15 release									
Apr 2015 - Mar 2016 (pub. Aug 2017)	-	-	-	-	-	-	-	-	-

At this stage of the year hip replacement (primary) and hip replacement (revision) show a similar number of modelled records, when looking at previous years we would expect this figure to increase faster for primary procedures over the coming months.

Table 6c: Cumulative data releases for hip replacements (revisions), 2015-16: modelled records and scores

England, 2015/16

Cumulative data releases	EQ-5D™ Index			EQ- VAS			Oxford Hip Score		
	Modelled records		Average Health Gain	Modelled records		Average Health Gain	Modelled records		Average Health Gain
	(n)	% change		(n)	% change		(n)	% change	
Part-year releases									
Apr 2015 - Jun 2015 (pub. Nov 2015)	8	-	*	7	-	*	9	-	*
Apr 2015 - Sep 2015 (pub. Feb 2016)	-	-	-	-	-	-	-	-	-
Apr 2015 - Dec 2015 (pub. May 2016)	-	-	-	-	-	-	-	-	-
Full-year provisional releases									
Apr 2015 - Mar 2016 (pub. Aug 2016)	-	-	-	-	-	-	-	-	-
Apr 2015 - Mar 2016 (pub. Nov 2016)	-	-	-	-	-	-	-	-	-
Apr 2015 - Mar 2016 (pub. Feb 2017)	-	-	-	-	-	-	-	-	-
Apr 2015 - Mar 2016 (pub. May 2017)	-	-	-	-	-	-	-	-	-
Final 2014/15 release									
Apr 2015 - Mar 2016 (pub. Aug 2017)	-	-	-	-	-	-	-	-	-

Table 7a: Cumulative data releases for knee replacements (primary and revision), 2015-16: episodes and questionnaires

England, 2015/16		counts, percentages							
Cumulative data releases	Episodes		Pre-operative questionnaires		Pre-operative questionnaires linked		Post-operative questionnaires		
	(n)	% change	(n)	% change	(n)	% change	(n)	% change	
Part-year releases									
Apr 2015 - Jun 2015 (pub. Nov 2015)	20,826	-	18,955	-	13,690	-	11	-	
Apr 2015 - Sep 2015 (pub. Feb 2016)	-	-	-	-	-	-	-	-	
Apr 2015 - Dec 2015 (pub. May 2016)	-	-	-	-	-	-	-	-	
Full-year provisional releases									
Apr 2015 - Mar 2016 (pub. Aug 2016)	-	-	-	-	-	-	-	-	
Apr 2015 - Mar 2016 (pub. Nov 2016)	-	-	-	-	-	-	-	-	
Apr 2015 - Mar 2016 (pub. Feb 2017)	-	-	-	-	-	-	-	-	
Apr 2015 - Mar 2016 (pub. May 2017)	-	-	-	-	-	-	-	-	
Final 2014/15 release									
Apr 2015 - Mar 2016 (pub. Aug 2017)	-	-	-	-	-	-	-	-	

As seen with hip replacement procedures post-operative questionnaires returned is significantly lower than with Varicose Vein and Groin Hernia procedures, this reflects the longer time delay in issuing these questionnaires to knee replacement patients.

Table 7b: Cumulative data releases for knee replacements (primary), 2015-16: modelled records and scores

England, 2015/16

Cumulative data releases	EQ-5D™ Index			EQ- VAS			Oxford knee Score		
	Modelled records		Average Health Gain	Modelled records		Average Health Gain	Modelled records		Average Health Gain
	(n)	(Quarterly % change)		(n)	(Quarterly % change)		(n)	(Quarterly % change)	
Part-year releases									
Apr 2015 - Jun 2015 (pub. Nov 2015)	12	-	*	9	-	*	12	-	*
Apr 2015 - Sep 2015 (pub. Feb 2016)	-	-	-	-	-	-	-	-	-
Apr 2015 - Dec 2015 (pub. May 2016)	-	-	-	-	-	-	-	-	-
Full-year provisional releases									
Apr 2015 - Mar 2016 (pub. Aug 2016)	-	-	-	-	-	-	-	-	-
Apr 2015 - Mar 2016 (pub. Nov 2016)	-	-	-	-	-	-	-	-	-
Apr 2015 - Mar 2016 (pub. Feb 2017)	-	-	-	-	-	-	-	-	-
Apr 2015 - Mar 2016 (pub. May 2017)	-	-	-	-	-	-	-	-	-
Final 2014/15 release									
Apr 2015 - Mar 2016 (pub. Aug 2017)	-	-	-	-	-	-	-	-	-

Primary knee replacements account for the majority of knee replacements carried out. Counts of modelled records for these procedures are low for November due to the time constraints involved with the questionnaire distribution and collection for both hip and knee procedures.

Table 7c: Cumulative data releases for knee replacements (revisions), 2015-16: modelled records and scores

England, 2015/16

Cumulative data releases	EQ-5D™ Index			EQ- VAS			Oxford knee Score		
	Modelled records		Average Health Gain	Modelled records		Average Health Gain	Modelled records		Average Health Gain
	(n)	% change		(n)	% change		(n)	% change	
Part-year releases									
Apr 2015 - Jun 2015 (pub. Nov 2015)	2	-	*	2	-	*	2	-	*
Apr 2015 - Sep 2015 (pub. Feb 2016)	-	-	-	-	-	-	-	-	-
Apr 2015 - Dec 2015 (pub. May 2016)	-	-	-	-	-	-	-	-	-
Full-year provisional releases									
Apr 2015 - Mar 2016 (pub. Aug 2016)	-	-	-	-	-	-	-	-	-
Apr 2015 - Mar 2016 (pub. Nov 2016)	-	-	-	-	-	-	-	-	-
Apr 2015 - Mar 2016 (pub. Feb 2017)	-	-	-	-	-	-	-	-	-
Apr 2015 - Mar 2016 (pub. May 2017)	-	-	-	-	-	-	-	-	-
Final 2014/15 release									
Apr 2015 - Mar 2016 (pub. Aug 2017)	-	-	-	-	-	-	-	-	-

Knee replacement (revision) operations make up only a small proportion of all knee replacements, meaning that overall counts of modelled records are low.

Table 8a: Cumulative data releases, varicose veins, 2015-16: episodes and questionnaires

England, 2015/16		counts, percentages							
Cumulative data releases	Episodes		Pre-operative questionnaires returned		Pre-operative questionnaires linked to an episode		Post-operative questionnaires returned		
	(n)	(Quarterly % change)	(n)	(Quarterly % change)	(n)	(Quarterly % change)	(n)	(Quarterly % change)	
Part-year releases									
Apr 2015 - Jun 2015 (pub. Nov 2015)	8,400	-	2,750	-	2,262	-	454	-	
Apr 2015 - Sep 2015 (pub. Feb 2016)	-	-	-	-	-	-	-	-	
Apr 2015 - Dec 2015 (pub. May 2016)	-	-	-	-	-	-	-	-	
Full-year provisional releases									
Apr 2015 - Mar 2016 (pub. Aug 2016)	-	-	-	-	-	-	-	-	
Apr 2015 - Mar 2016 (pub. Nov 2016)	-	-	-	-	-	-	-	-	
Apr 2015 - Mar 2016 (pub. Feb 2017)	-	-	-	-	-	-	-	-	
Apr 2015 - Mar 2016 (pub. May 2017)	-	-	-	-	-	-	-	-	
Final 2014/15 release									
Apr 2015 - Mar 2016 (pub. Aug 2017)	-	-	-	-	-	-	-	-	

The number of varicose vein episodes has increased slightly when compared to the same period last year, where only 7,144 episodes had been counted.

Table 8b: Cumulative data releases, varicose veins, 2015-16: modelled records and scores

England, 2015/16		<i>counts, percentages, averages</i>								
Cumulative data releases	EQ-5D™ Index			EQ- VAS			Aberdeen Varicose Vein Questionnaire			
	Modelled records		Average Health Gain	Modelled records		Average Health Gain	Modelled records		Average Health Gain	
	(n)	(Quarterly % change)		(n)	(Quarterly % change)		(n)	(Quarterly % change)		
Part-year releases										
Apr 2015 - Jun 2015 (pub. Nov 2015)	538	-	0.095	531	-	-0.823	551	-	-8.793	
Apr 2015 - Sep 2015 (pub. Feb 2016)	-	-	-	-	-	-	-	-	-	
Apr 2015 - Dec 2015 (pub. May 2016)	-	-	-	-	-	-	-	-	-	
Full-year provisional releases										
Apr 2015 - Mar 2016 (pub. Aug 2016)	-	-	-	-	-	-	-	-	-	
Apr 2015 - Mar 2016 (pub. Nov 2016)	-	-	-	-	-	-	-	-	-	
Apr 2015 - Mar 2016 (pub. Feb 2017)	-	-	-	-	-	-	-	-	-	
Apr 2015 - Mar 2016 (pub. May 2017)	-	-	-	-	-	-	-	-	-	
Final 2014/15 release										
Apr 2015 - Mar 2016 (pub. Aug 2017)	-	-	-	-	-	-	-	-	-	

Comparability and Coherence

Other official statistics published by the HSCIC that report on extracts of HES inpatient data allocate episodes to time periods based on episode end date. PROMs publications, however, use the episode start date to assign records to time periods, as this date more closely represents the date of the PROMs operation.

A small number of HES episodes record more than one eligible PROMs procedure (19 episodes in 2015/16). PROMs publications report on eligible procedures, whereas other publications from HES data report on episodes. In practice, this means that if a patient undergoes a both hip and knee replacement in a single hospital episode, their hospital episode as both a hip replacement procedure and as a knee replacement procedure: each of which may be linked with PROMs questionnaires.

Since the PROMs programme began in April 2009, the case-mix methodology has undergone revisions designed to improve the comparability of provider-level data. These should be taken into consideration when interpreting provider-level time series data:

- From 2012/13 onwards, hip and knee replacement procedures have been split into primary and revision surgeries for case-mix-adjustment and reporting.¹¹ As a very large majority of hip and knee replacements are primary procedures, and analysis suggests that the impact of this methodological change on provider-level outlier data was small, 2011/12 finalised data for hip and knee replacements is presented together with time-series data for primary procedures in later reporting years (for example, in the time series reporting incorporated in the Google Maps service).¹²
- From 2012/13 onwards, the case-mix aggregation method has been based on the difference between patients' observed and predicted scores; earlier reporting years were based on the ratio between these scores.

Timeliness and Punctuality

Timeliness

Analysis in this report is based on:

- Pre-operative patient questionnaires completed between 1 April 2015 and 30 June 2015 and any associated in-patient hospital episodes and post-operative questionnaires;
- Episodes of inpatient hospital care where the episode started between 1 April 2015 and 30 June 2015 and which included one of the four surgical procedures eligible for PROMs.

¹¹ Revision procedures are carried out on an existing replacement joint. Reasons for undertaking revision procedures are varied, and include complications from primary surgery, and cases where the replacement joint has reached the end of its natural life.

¹² For more information about this revision to the casemix adjustment methodology please see "Announcement of methodological changes to: Finalised Patient Reported Outcome Measures (PROMs) in England; Provisional Monthly Patient Reported Outcome Measures (PROMs) In England", November 2013, http://www.hscic.gov.uk/media/13159/Finalised-Patient-Reported-Outcome-Measures-PROMs-in-England-and-Provisional-Monthly-Patient-Reported-Outcome-Measures-PROMs-in-England/pdf/MethChan20131114_FinalPROMSandPROMS.pdf. NHS England has also published information about the impact of this change to the casemix adjustment methodology at <http://www.england.nhs.uk/statistics/wp-content/uploads/sites/2/2013/10/proms-meth-prim-revis.pdf>

- Episodes of inpatient hospital care where episode ended between 1 April 2015 and 30 June 2015 (which included one of the four PROMs-eligible procedures) and any associated pre- and post-operative questionnaires.

Annual datasets are typically finalised fifteen months after the end of the reporting period covered. This delay is needed to:

- allow sufficient recovery time after surgery before post-operative questionnaires are completed and;
- maximise the number of post-operative questionnaires returned.

A further six weeks (approximately) is necessary for data processing, analysis and production and checking of the annual publication.

Punctuality

This publication was published on the pre-announced release date.

Data collection and burden

The PROMs programme invites all NHS-funded patients going through a PROMs-eligible procedure to complete pre- and post-operative questionnaires, which are linked, where possible, to administrative data about their procedure-related health care.

Pre-operative questionnaires:

Patients due to have a PROMs-eligible procedure are invited to complete a voluntary self-administered pre-operative PROMs questionnaire. Questionnaires may be administered on the day the patient is admitted for treatment or at a pre-assessment clinic beforehand. The content and layout of these questionnaires is standard across all providers. Paper-based questionnaires are predominantly used, but questionnaires can be delivered electronically, provided that the look and feel is consistent with the paper-based versions.¹³ Questionnaire length varies with procedure type, ranging from six pages for groin hernia procedures to ten pages for varicose vein procedures. Patients may be assisted to complete questionnaires if they are unable to do so independently; this is recorded within the questionnaire itself. Typically the questionnaire will take around 5 - 10 minutes to complete.

All variations of the pre-operative questionnaires:

- Address consent issues by stating that participation is voluntary, describing how patient information will be used and linked with other data, and asking patients' permission to share patient-provided information with healthcare professionals directly involved in providing their care;
- collect personal information needed to:
 - send post-operative questionnaires to the patient,

¹³ Some providers administer pre-operative questionnaires electronically: providers choosing this option must ensure that appearance of the electronic questionnaire (e.g. layout) matches that of the paper-based questionnaire. This is intended to minimise mode effects (systematic differences in responses that are due to differences in how the questionnaires are administered, rather than differences among respondents). The standards for electronic representation of PROMs questionnaires are included within the Department of Health, Patient Reported Outcome Measures (Standards), 2012:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/212849/proms-framework-standards-k-m-050712.pdf

- link the pre-operative questionnaire to administrative data about the related inpatient hospital procedure;
- ask questions about the specific condition for which the patient will be treated¹⁴; and
- ask general questions about the patient's health and quality of life.

The pre-operative questionnaires also collect information about other health conditions that may affect recovery and/or quality of life.

Pre-operative questionnaire collection and processing

All providers that offer treatment eligible for PROMs will hold a contract with a third party data supplier accredited to offer questionnaire services to the NHS under the Patient Questionnaire Framework (PQF). Pre-operative questionnaires are collected by providers after completion and sent to their data supplier. The data supplier carries out a number of processing tasks prior to submitting record-level data files to the HSCIC:

- Paper questionnaires are physically scanned and the information extracted using software;
- The NHS Number is obtained from the NHS Demographics Batch service from the personal information on the questionnaire;
- Data may be verified by hand in cases where the data are ambiguous or the software cannot determine what has been recorded due to poor handwriting;
- Data validation rules are applied, such as ensuring the data are in the correct format for submission.

The HSCIC validates the data submissions on arrival and links pre-operative questionnaires with administrative data about patients' hospital stays (for relevant procedures) held in the Hospital Episode Statistics (Admitted Patient Care) dataset.¹⁵ Pre-operative questionnaires then become available for HSCIC to analyse, whether or not they are successfully linked to an inpatient episode.

Post-operative questionnaires

Patients who have completed pre-operative questionnaires are asked to complete a post-operative questionnaire. These are sent to patients at their homes for self-completion. The timeframe within which post-operative questionnaires must be sent depends upon the procedure and whether or not the pre-operative questionnaire has been successfully linked with an episode.

Where pre-operative questionnaires link to a HES episode, the HSCIC sends the data supplier a file containing the PROMs Serial Number, the procedure, and the operation date. This lets data suppliers calculate when to send post-operative questionnaires to patients. Post-operative questionnaires should be sent out according to the schedule outlined in Table 9.

¹⁴ Patients undergoing groin hernia procedures are not asked condition-specific measures.

¹⁵ Detailed information about the matching algorithm used to link pre-operative questionnaires with HES episodes can be found in "Matching methodology" section of "Monthly Patient Reported Outcome Measures (PROMs) in England: A guide to PROMs methodology" http://www.hscic.gov.uk/media/1537/A-Guide-to-PROMs-Methodology/pdf/PROMs_Guide_V8.pdf

Table 9: Schedule for post-operative questionnaire distribution¹⁶

	If pre-operative questionnaire links to a hospital episode	If pre-operative questionnaire does not link to a hospital episode
Groin hernia	Three months after the procedure date	Approximately six months after pre-operative questionnaire scan date ^a
Hip replacement	Six months after the procedure date	Approximately nine months after pre-operative questionnaire scan date
Knee replacement	Six months after the procedure date	Approximately nine months after pre-operative questionnaire scan date
Varicose vein	Three months after the procedure date	Approximately six months after pre-operative questionnaire scan date

^aAll pre-operative questionnaires are assigned a 'default' date, which is the length of time usually allowed for recovery from the PROMs procedure (three months or six months), plus twelve weeks from the pre-operative questionnaire scan date. Where pre-operative questionnaires do not link to procedures, they are mailed out to arrive near the default date.

Data suppliers can send out up to two follow-up mailings to patients that have not returned post-operative questionnaires, encouraging them to do so.

Post-operative questionnaires contain:

- A pre-printed serial number (often in the form of a bar-code which can be scanned) enabling the post-operative questionnaire to be linked with the pre-operative questionnaire;
- Questions about whether or not the patient required assistance to complete the questionnaire;
- Questions about procedure-related complications;
- Questions about the specific condition for which the patient received treatment (identical with those used in the pre-operative questionnaire);
- Questions about self-reported health and quality of life (identical with those used in the pre-operative questionnaire).¹⁷

Post-operative questionnaire collection and processing

Patients return completed post-operative questionnaires to the data supplier using a pre-paid envelope. The data supplier then performs similar processing tasks as for the pre-operative questionnaire prior to submitting post-operative data as record-level xml files to the HSCIC:

On receipt of post-operative data, HSCIC performs a number of validation checks and the data becomes available for HSCIC analyses and publications.

¹⁶Department of Health, "Patient Reported Outcome Measures (PROMs) Standards https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/212848/proms-framework-standards-a-j-050712.pdf

¹⁷Samples of pre- and post-operative questionnaires for all PROMs-eligible procedures are available at: http://webarchive.nationalarchives.gov.uk/+/www.dh.gov.uk/en/publicationsandstatistics/publications/publicationspolicyandguidance/dh_091815

Accessibility and Clarity

Survey materials

PROMs are paper-based or electronic questionnaires designed for independent completion by patients. The survey administration method includes the following measures intended to increase accessibility:

- Data suppliers are required to provide contact points via a range of different media (mail, email, internet) including operation of a help line (in working hours);
- Family members, friends or provider staff (the latter for the pre-operative questionnaire only) may assist the patient to complete the questionnaire. Both the pre- and post-operative questionnaires ask whether or not the patient has been assisted to complete the questionnaire.

Publications

The HES dataset used in the PROMs publication has been collected primarily for official administrative purposes. Information about the administrative source and its use for statistical purposes is included in the HSCIC's *Statement of Administrative Sources* at <http://www.hscic.gov.uk/article/1789/Statement-of-administrative-sources>.

Other extracts of the HES dataset are published by the Health and Social Care Information Centre. Details are available at <http://www.hscic.gov.uk/article/1823/What-HES-data-is-available>.

This publication is being made available on the world-wide-web as a combination of web pages and downloadable reports and data files. The publication may be requested in large print or other formats through the HSCIC's contact centre: enquiries@hscic.gov.uk (please include 'PROMs' in the subject line).

Appendix A: Method for estimating missing PROMs episodes

The following approach is used to estimate missing PROMs episodes for providers known to have missing HES episodes. Within the equations below, the current reporting period (RP) is the portion of the current financial year covered within the publication (in this case the current reporting period is April 2015 and 30 June 2015).

- Where providers have submitted PROMs episodes for both part of the current reporting period (RP) and for the previous reporting period:

Estimated missing episodes for current RP

$$\begin{aligned}
 &= \sum \text{Episodes for corresponding months of previous year} \\
 &+ \left(\sum \text{Episodes for corresponding months of previous year} \times \text{Annual rate of change} \right) \\
 &- \sum \text{Episodes within current RP in months for which partial data submitted}
 \end{aligned}$$

The annual rate of change is the percentage difference (expressed as a decimal) between the number of episodes within the current reporting period (for which data submissions were complete) and the corresponding period of the previous financial year. The data submission for any given month is assumed to be incomplete if it has fewer than half as many episodes as the corresponding month of the previous reporting year. This method of estimation is used because it takes some account of seasonal variation in episode numbers.

- Where providers have submitted PROMs episodes for part of the current reporting period, and none of the previous year's reporting period (for example, new providers);

Estimated missing episodes for current RP

$$\begin{aligned}
 &= \left(\left(\frac{\sum \text{Episodes in current RP}}{n(\text{Months for which data submitted})} \right) \times n(\text{Months in current RP}) \right) \\
 &- \sum \text{Episodes in current RP}
 \end{aligned}$$

- Estimates of missing PROMs episodes are produced only for providers having at least one recorded PROMs episode in the current reporting period.
- Estimates are rounded to the nearest ten episodes (estimates between 1 and 4 inclusive are shown as '<5').

**Published by the Health and Social Care Information Centre
Part of the Government Statistical Service**

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978-1-78386-537-6

This publication may be requested in large print or other formats.

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