

COMPLEX PATIENT ANALYSIS

March 9, 2015

Background

This analysis covers inpatient admissions, outpatient and A&E attendances for 'Complex Patients'. Complex patients are defined as the 2% of Inpatients a CCG spends the most money on (covered by PbR mandatory final tariff) in 2013/14. The same anonymised patients are used throughout the analysis.

Inpatient Data Methodology:

Analysis	Complex patients analysis
Time Period	Financial Year 2013/14
Age Group	All ages
Data Source	Secondary Uses Service (SUS) PbR
Source Location	http://www.hscic.gov.uk/sus

SUS PbR inpatient spells data is used. The data is ranked by total spend for each CCG. Those patients with the highest spend have the highest ranking. Of the total number of patients recorded by each CCG for the period 2013/14 the top 2% of patients is selected and deemed as complex.

For example if CCG A has 5000 patients this would equate to 100 patients as:

$5000 \times 2\% = 100$ complex patients

Only patients with a mandatory tariff recorded and a populated 'NHS Number' have been selected.

The same patients have been used to source the Outpatient and A & E data for further analysis.

The fields that were pulled from SUS include:

- CCG code
- NHS Number (this is the anonymised NHS number)
- Sex
- Age
- Number of Distinct Spells
- Number of Distinct Spell Programme Budget Codes
- % CCG Total Spend
- Programme Budget Codes (to a maximum of 16 codes)
- No Spells Per Programme Budget Code
- PBR FINAL TARIFF (for each Programme Budget Code)

The data included observations which were not needed for the analysis. This included CCGs which were not found in the official list of CCGs across England. These are: 59898, 59999, Q99, T1430, TAP, X26, 13Q, 5N4, 5NH, 5QA, 7A1, 7A7, 12V, 12W, 13K and 13Q. These have been removed from the analysis.

In total there are 157168 patients included in the analysis.

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Complex patients - Age Profile Table

The table provides a summary of age structure and other related characteristics of CCG's complex patients. Table results are presented by each age group.

Definitions:

Measure	Definitions
Age	The age structure of complex patients is presented in 4-year age bands, excluding the "0" age band for babies less than one year old and the "90+" age band for people aged 90 and over.
Number of complex patients	The number of complex patients were counted and grouped into each age band.
Mean Number of Admissions	The average number of hospital admissions per complex patient. The total number of related hospital admissions divided by the total number of complex patients in the same age band.
Mean Number of Different Conditions	The average complex patient is admitted to hospital for three different conditions per year. This is calculated by dividing the total number of different conditions (based on the count of distinct Programme Budgeting subcategories) for complex patients in the age band by the total number of patients in the age band.
Total Spend (£000s)	The total amount of spend for all healthcare programme admissions (covered by the Payment by Results mandatory tariff) for all complex patients in the age band in 2013/14. Total spend is expressed in thousands.

Please note that complex patients' numbers were suppressed for low numbers by an asterisk *, the total numbers of complex patients have been adjusted accordingly due to suppressed numbers

Complex patients - Age Profile Chart

The chart displays the CCG age structure for its complex patients compared with the age structure of the average of similar 10 CCGs. The comparison will highlight whether the CCG has more or less complex patients than its similar 10 CCGs per age group. For more details on the methodology of the 10 similar CCGs, please refer to NHS England commissioning for value website.

On the chart, the orange bar shows the percentage of CCG complex patients per age group, where the percentage difference from the average of similar 10 CCGs is presented by a purple bar.

The total number of complex patients in the similar 10 CCGs were counted for each age band and then divided by 10. The percentage difference from the similar 10 CCGs is calculated for each age band by deducting the percentage for the CCG from the percentage for the Similar 10.

Please note that this chart is not a stacked bar chart, instead we are presenting two separate bars referencing to the same X and Y axes and both reference to the 0% origin point.

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Complex patients – Spend Profile Chart

The chart displays the CCG spend on its complex patients' related admissions compared with the average spend of its similar 10 CCGs. This highlights the healthcare programmes with the highest spend for admissions covered by the Payment by Results mandatory tariff compared to its 10 most similar CCGs and whether the CCG spends more or less than its similar 10 CCGs per healthcare programme. For more details on the methodology of the 10 similar CCGs, please refer to NHS England commissioning for value website.

On the chart, the orange bar shows the percentage of CCG complex patients per healthcare programme, where the percentage difference from the similar 10 CCGs is presented by a purple bar.

The total expenditure on complex patients in the similar 10 CCGs is summed for each healthcare programme and then divided by 10. The percentage difference from the similar 10 CCGs was calculated for each healthcare programme by deducting the percentage for the CCG from the percentage for the Similar 10. The 14 highest spend healthcare programmes is shown in the chart.

Please note that this chart is not a stacked bar chart, instead we are presenting two separate bars referencing to the same X and Y axes and both reference to the 0% origin point.

Complex patients – Co-morbidities

The co-morbidities table is made up from three different factors: the main condition, co-morbidities conditions and the number of patients who were admitted to hospital for these conditions.

Definitions:

Measure	Definition
Main Conditions	The most common conditions of admissions for complex patients. These are the count of healthcare programme conditions (based on the number of distinct Programme Budgeting subcategories) for CCG complex patients who were admitted to hospital in 2013/14. The top 5 categories are shown.
Co-morbidities	The most common other conditions of admissions for patients who were identified with a main condition. The same methodology for the main conditions above is applied to determine patient's co-morbidities. The top 5 co-morbidities conditions are shown for each main condition.

The last slide in the pack provides guidance on how to correctly interpret the co-morbidities table results.

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Complex patients - A&E

The A & E data is sourced from SUS for the year 2013-14. The patients analysed are sourced from the Inpatient analysis to keep the analysis like-for-like and to help understand how many Inpatients also attend A & E. The fields pulled from SUS include:

- NHS Number (this is the anonymised NHS number)
- A & E Tariff
- Attendances
- Diagnosis code
- Age

Only the patients that are included in the Inpatient analysis are included in the A & E analysis where they appear in the A & E dataset.

The data has been aggregated to the NHS Number level to remove any duplication and potential over-counting due to other fields sourced from the database. For example age, where a patient could have attended during the course of the year appearing in the data twice due to an elapsed birthday.

As CCG was not a field that was present in the A & E dataset, the dataset was joined to the Inpatient data and the Inpatient CCG was used. This was derived as the main CCG i.e. the CCG with the highest tariff for that patient where few patients have tariffs attributed to more than 1 CCG.

The A & E analysis shows a chart and a table of patients by frequency of attendance. Therefore, if a patient had 6 attendances as an A & E patient over the period analysed that patient would be classified in the band of greater than 5 attendances. If a patient had 11 attendances that patient would be presented in both greater than 5 and greater than 10 attendance bands. The overall number of patients and their total attendances is presented by band and overall. This provides the CCG with a view of how often complex patients are attending A & E together with how this differs to their Similar 10 cluster group.

The below table shows the definitions for the A & E analysis:

Measure	Definition
Patients	Count of distinct NHS Numbers for the CCG or Similar 10 CCGs at the level reported.
% Patients	Patients as a proportion Total [Patients].
Attendances	Sum of attendances for the CCG or Similar 10 CCGs at the level reported.
% Attendances	Attendances as a proportion of Total [Attendances].
Patient % Diff to Similar 10	% Patients for CCG minus % Patients for Similar 10.
Attendance % Diff to Similar 10	% Attendances for CCG minus % Attendances for Similar 10.
Total	Patients = the total distinct NHS numbers belonging to the CCG. Attendances = the sum of the attendances for the CCG.
Attendance frequency	This is a banding attribute to report the number of patients who have attended an Outpatient appointment more than 5, 10 or 15 times. Note that patients reported in the higher band will also be reported in the bands that are lower.

Please note that complex patients' numbers were suppressed for low numbers by an asterisk *, the total numbers of complex patients have been adjusted accordingly due to suppressed numbers
Also note that the chart is not a stacked bar chart, instead we are presenting two separate bars referencing to the same X and Y axes and both reference to the 0% origin point.

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Complex patients – Outpatients

The Outpatient data is sourced from SUS for the year 2013-14. The patients analysed are sourced from the Inpatient analysis to keep the analysis like-for-like and to help understand how many Inpatients also attend Outpatient appointments. The fields pulled from SUS include:

- NHS Number (this is the anonymised NHS number)
- Outpatient Tariff
- Attendances
- Treatment Function Code
- Age

Only the patients that are included in the Inpatient analysis are included in the Outpatient analysis where they appear in the Outpatient dataset.

The data includes all Outpatient attendances with the exception of some conditions e.g. Mental Health as this information is not fully available in the inpatient data. For a full list of please refer to the translation table in the excel attachment 'Appendix I – Outpatient Translation' which shows the derivation of outpatient treatment functions to conditions used in the analysis and the conditions which are included. Note that while attendances for certain conditions have been excluded, a single patient can have multiple conditions. Therefore if a patient attended for a condition which is included in the analysis as well as a condition excluded, that patient will be retained in the analysis for the attendances of the included condition(s). The patients included could have either attended an Outpatient appointment for a condition related to the condition they were admitted for as an Inpatient or for a different condition altogether.

As with the A & E data, Outpatient data has been aggregated to the NHS Number level to remove any duplication and potential over-counting due to other fields sourced from the database. For example age, where a patient could have attended during the course of the year appearing in the data twice due to an elapsed birthday.

As CCG was not a field present in the Outpatient dataset, the dataset was joined to the Inpatient data and the Inpatient CCG was used. This was derived as the main CCG i.e. the CCG with the highest tariff for that patient where few patients have tariffs attributed to more than 1 CCG.

As with the A & E analysis the Outpatient analysis shows a chart and table number of patients by frequency of attendance to provide the CCG with a view of how often complex patients are attending as an Outpatient together with how this differs to their Similar 10 cluster group.

In addition, the outpatient analysis shows a table of the top 5 conditions specific to the CCG based on the total number of Outpatient attendances. This provides the CCG with a summary of the main types of conditions for which their complex patients attend as an outpatient including the number of patients and the number of attendances for each of those top conditions.

There are notes that go along with this table regarding the derivation of the conditions. Appendix I details how these conditions are derived. Furthermore, the number of patients for the top conditions cannot be summed. This is due to some patients having multiple conditions, meaning that the patient could be included for one condition as well as another so the patient numbers are not independent of each other.

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The below table shows the definitions for the Outpatient analysis:

Measure	Definition
Patients	Count of distinct NHS Numbers for the CCG or Similar 10 CCGs at the level reported.
% Patients	Patients as a proportion Total [Patients].
Attendances	Sum of attendances for the CCG or Similar 10 CCGs at the level reported.
% Attendances	Attendances as a proportion of Total [Attendances].
Patient % Diff to Similar 10	% Patients for CCG minus % Patients for Similar 10.
Attendance % Diff to Similar 10	% Attendances for CCG minus % Attendances for Similar 10.
Total	Patients = the total distinct NHS numbers belonging to the CCG. Attendances = the sum of the attendances for the CCG.
Attendance frequency	This is a banding attribute to report the number of patients who have attended an Outpatient appointment more than 5, 10 or 15 times. Note that patients reported in the higher band will also be reported in the bands that are lower.
Top 5 Conditions	This is a grouping of Treatment function codes. Attendances are summed based on this grouping and the top 5 specific to the CCG are reported. [Please refer to Appendix I for translation of Treatment function codes to Condition].

Please note that complex patients' numbers were suppressed for low numbers by an asterisk *, the total numbers of complex patients have been adjusted accordingly due to suppressed numbers
Also note that the chart is not a stacked bar chart, instead we are presenting two separate bars referencing to the same X and Y axes and both reference to the 0% origin point.

Complex patients – Summary

This slide provides each CCG with a summary of their complex patients. This mostly summarises information which has been provided elsewhere in the pack.