Do health checks for adults with intellectual disability reduce emergency hospital admissions? Evaluation of a natural experiment

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† - Prior to publication Dr Shah died. His co-authors would like to pay tribute to him, who as the principal investigator on this study successfully led it from inception.

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Abstract

Background

Annual health checks for adults with intellectual disability (ID) have been incentivised by NHS England since 2009, but it is unclear what impact they have had on important health outcomes such as emergency hospitalisation.

Methods

An evaluation of a “natural experiment”, incorporating practice and individual level designs, to assess the effectiveness of health checks for adults with ID in reducing emergency hospital admissions using a large English primary care database. For practices, change in admission rates for adults with ID between 2009-10 and 2011-12 were compared in 126 fully participating versus 68 non-participating practices. For individuals, changes in admission rates before and after first health check for 7,487 adults with ID were compared to 46,408 age-sex-practice matched controls. Incident rate ratios (IRR) comparing change in admission rates are presented for: all emergency, preventable emergency (for ambulatory care sensitive conditions (ACSCs)) and elective.

Results

Practices with high health check participation showed no change in emergency admission rate among ID patients over time compared to non-participating practices (IRR=0.97, 95%CI 0.78-1.19), but emergency admissions for ACSCs did fall (IRR=0.74, 0.58-0.95). Among individuals with ID, health checks had no effect on overall emergency admissions compared to controls (IRR=0.96, 0.87-1.07), although there was a relative reduction in emergency admissions for ACSCs (IRR=0.82, 0.69-0.99). Elective admissions showed no change with health checks in either analysis.

Conclusions

Annual health checks in primary care for adults with ID did not alter overall emergency admissions, but they appeared influential in reducing preventable emergency admissions.
Introduction

Adults with intellectual disability (ID) experience high levels of morbidity, hospitalisation and premature mortality.[1] In response to recommendations from the Disability Rights Commission,[2] in 2009 the English National Health Service (NHS) introduced an annual health check scheme as a Directed Enhanced Service (DES) in primary care for adults with ID.[3] This was intended to identify undetected health problems and improve prescribing and coordination with secondary care. Systematic reviews on the effectiveness of health checks in people with ID have confirmed that they are effective in identifying new health problems, improving uptake of preventive interventions and improving indicators of process of care.[4] However, there is little evidence on their effectiveness in modifying outcomes such as hospitalisation,[5] which is important for patients, carers and the health services. With only half of eligible adults receiving health checks by 2011-12,[6] this provided the opportunity to evaluate the scheme by viewing it as a “natural experiment”.

In this paper we use a robust observational methodology, using practice and individual level designs, to assess whether the introduction of health checks in 2009 reduced emergency hospitalisation for adults with ID. We first compare high with low uptake practices, evaluating change in admission rates for all adults with ID, controlling for underlying differences between practices. However, the possibility remains that participating practices improved the care of their ID patients independent of introducing health checks. Therefore, we also present a matched cohort study comparing change in admission rates of individuals with ID who had health checks to that seen for a matched group of non-ID patients, controlling for secular trends in practice care or hospital admissions. Finally, a second matched cohort study for individuals with ID not receiving health checks is then used to confirm the specificity of findings to those having a health check only.

Methods

Data source

The Clinical Practice Research Datalink (CPRD) is a large primary care database representative of the UK population.[7] We included 343 practices in England recording data on 1/1/2009, anonymously linked to Hospital Episodes Statistics (HES) data. HES records clinical and administrative information on all NHS funded inpatient episodes, and allows for identification on method of admission (e.g. emergency), in addition to the primary reason for the admission.

Identification of patients with ID and their health checks

We have previously detailed our methodology for identifying adults (aged 18-84) with ID in CPRD in England.[8] Briefly, we included all codes used by the Quality and Outcome Framework (QOF) for learning disability,[9] plus additional codes for conditions usually associated with ID such as chromosomal and metabolic disorders (E-table 1). Health checks were identified by specific Read codes used by practices to facilitate future payment. We only
included health checks from 1/4/2009, the point from when practices received remuneration for carrying them out.

We classified ID patients with high levels of support needs based on either a record of severe or profound ID or, where no record of severity was available (59%), at least two of the following: cerebral palsy/significant mobility problem, severe visual impairment, severe hearing impairment, epilepsy (excluding absence seizures), continence problem and use of percutaneous endoscopic gastrostomy (PEG) feeding (E-table 2). ID patients were estimated to be living in a communal setting by specific Read codes (E-table 3), or the presence of 3 or more people with ID with the same address flag.

Hospital admission outcomes

Our main outcome was a count of emergency hospital admissions, defined as distinct periods of care on the HES record. We were also interested in emergency admissions for ambulatory care sensitive conditions (ACSCs),[10] which are thought to be potentially preventable with better clinical management. We included 20 widely used ACSCs, adding 3 further conditions (constipation, aspiration, gastro-oesophageal reflux disease) which are more relevant reasons for admission among adults with ID.[11] We identified these using the primary ICD-10 diagnosis for the first episode of the hospitalisation (E-table 4). We also analysed elective admissions as an outcome, to test whether health checks had an impact on this aspect of care.

Practice level assessment of health checks

We classified practice participation in the DES by calculating the percentage of patients registered on 1/1/2009 on the QOF learning disability register that subsequently received a health check. For this analysis we restricted to 289 practices with complete data from 1/1/2009 to 31/12/2012, including all ID adults irrespective of whether they received a health check (Figure 1). We defined full practice participation (n=126) as ≥50% of their ID adults having a health check by 2010. Practices (n=68) with <25% adults having a health check by 2012 were classed as non-participating, with the remainder (n=95) having participation rates of 25-50%. We then compared practice hospital admission rates (total admissions divided by total registration time) in 2011-12 vs. 2009-10 between practices fully- and non-participating.

Individual analysis of first health check

For our analysis of individuals, we carried out a matched cohort that compared within subject, the rate of admission after the first recorded health check from 1/1/2009 to 31/12/2013, with that seen before the health check (Figure 1). Up to 7 controls (with no record of ID) were matched on age, sex and practice to control for any temporal trends in admissions during the study. 7,487 ID adults aged 18-84 with a first health check were identified and matched to 46,408 controls. We excluded the period 30 days either side of the health check to avoid it directly leading to an admission, or being the result of a recent discharge from hospital. All patients were required to be registered for at least 90 days prior to the health check, and be
alive for 90 days after it. All patients were followed to 31/12/2013, or their death if it was earlier. Those who de-registered from their practice were still included in the follow up as linkage to hospital admissions continues as long they remain resident in England.

Finally, we carried out a complementary analysis using 6,922 ID adults without health checks (Figure 1). We allocated a random index date based on the known dates of the health checks, and similarly matched them to 47,662 population controls. We then repeated the above analysis using the non-health check ID adults and their controls to check whether any observed changes in admissions for ID adults were specific to those receiving health checks only.

**Statistical Analysis**

The analyses used a conditional Poisson model (xtpoisson, Stata version 13), to compare the rate of change over time at a practice or individual level. At practice level, these were conditioned on practice, and all admissions from patients with ID were counted, using an offset term to account for total time registered. The effect of practice participation on hospital admissions was estimated by the interaction between practice participation (fully vs. none) and period (2011-12 vs. 2009-10). At individual level, we conditioned on individual as opposed to matchset, as accounting for the matching variables is not paramount in matched cohort analyses[12]. This model was fitted to ID adults and controls separately, estimating the individual change in hospital admission rate after as compared to before health check, with an offset accounting for time registered. A combined model of ID adults and controls with a case-period interaction provides an estimate of the effect of health checks on admission rates among adults with ID, adjusted for temporal trends in admissions. All models used a sandwich estimator to obtain robust standard errors.

**Results**

*Practice level analyses of health checks and hospital admissions*

Practices fully participating in health checks compared to those not participating (Table 1), were more likely to have larger numbers of ID adults in their practice, as well as higher percentages recorded living in communal establishments (median 20.0 vs. 7.7%) and having high levels of support need (median 22.2 vs. 15.2%).

A summary of hospital admissions (all emergency, emergency ACSCs, elective) among adults with ID during 2009-12 is shown in Figure 2 and analysed in Table 2. Emergency admission rates calculated in each quarter (Figure 2) tended to fall over time. This is summarised annually in Table 2 as a fall from 191.1 per 1000 patients per year in 2009-10, to 176.7 in 2011-12. Non-participating health check practices had consistently higher emergency admission rates throughout than those fully participating (Figure 2), with both groups experiencing a similar fall over time (IRR=0.97, 95%CI 0.78-1.19).
When emergency admissions for ACSCs were considered the pattern was different (Figure 2, Table 2). While these admissions had fallen among those fully participating in health checks (69-2 in 2009-10 to 56-3 in 2011-12 per 1000 patients), they tended to rise in practices not participating (70-1 to 77-1 per 1000 patients). A statistical comparison of the difference in this change showed an overall benefit of greater practice participation (IRR=0·74, 95%CI 0·58-0·95). There was no evidence of any difference in the change over time in elective admissions between fully- and non-participating practices (IRR=1·02, 95% CI 0·84-1·25).

**Characteristics of ID adults with and without health checks**

Among the 7,487 adults with ID with a first health check between 1/4/2009 and 31/3/2013, the average age was 42.6 years (s.d.=15·4), with 57.5% being male (Table 3). Almost 3 in 10 were classified as having high levels of support needs, with a similar proportion identified as being resident in a communal establishment. By contrast, the 6,922 ID adults without a health check were younger (mean=39·0) and less likely to have high levels of support needs or communal living recorded on their record.

**Individual analyses of health checks and hospital admissions**

Hospital admission rates before and after the health check are summarised in Table 4, and also for adults without health checks using their random index date. For adults with a health check, all emergency admissions rose by 22% from 145·7 to 173·2 annually per 1000 patients. By contrast, in their matched controls the rate increased by 27% from 58·9 to 70·2 (data not shown). Therefore, in the combined Poisson model, the interaction for the impact of health checks on adults with ID is estimated to be under 1 (IRR=0·96, 95%CI 0·87-1·07). ID adults without health checks had higher overall admission rates for emergency admission (186·0 vs. 145·7 pre index date), and a slight increase in admission rate post index date relative to their controls (IRR=1·05, 95%CI 0·94-1·17).

Emergency admissions for ACSCs among adults with health checks showed an association with change in admission rate post health check compared to controls (IRR=0·82, 95%CI 0·69-0·99). This trend was not replicated in ID adults without a health check (IRR=1·11, 95% CI 0·92-1·36). The change in elective admission rate was similar between ID adults with health checks and controls (IRR=0·96, 95%CI 0·87-1·06).

Table 5 summarises the estimate of the impact of health checks on emergency hospital admissions stratified by individual characteristics, both for ID adults with and without health checks. A significant rise in admissions among Down’s syndrome adults with health checks compared to their controls (IRR=1·55, 95% 1·15-2·08), was replicated among Down’s adults without health checks (IRR=1·55), suggesting a trend specific to this group. By contrast, while health checks reduced emergency admissions among ID adults with high levels of support needs (IRR=0·80, 95%CI 0·67-0·95), this was not replicated in similarly defined ID patients without health checks (IRR=1·07, 95% CI 0·85-1·35). A further analysis of ID patients with high levels of support needs receiving health checks also suggested a decrease in their emergency admissions for ACSCs compared to controls (IRR=0·76, 95%CI 0·56-1·01, data not shown).
Discussion

In this study we found little evidence to suggest that the introduction of incentivised health checks by NHS England for adults with ID in 2009 had any discernible impact on subsequent overall emergency or elective admissions. However, when we only considered potentially preventable emergency admissions (ACSCs) we found that practices which were fully participating in health checks experienced a greater fall in admissions than those not participating. This beneficial association with preventable admissions was replicated when we looked directly at individuals with ID who had a recorded health check. This analysis also suggested a wider benefit of health checks on all emergency admissions among those with more complex health needs.

We believe our study is the first to report benefits of health checks for adults with ID on a health outcome as opposed to process measures.[13] While a systematic review has shown the effectiveness of health checks in detecting unrecognised health needs in people with ID,[4] it highlighted the lack of evidence regarding whether their provision translated into important longer term benefits, such as a reduction in avoidable hospitalisations or mortality. The evidence for effectiveness of health checks in general adult populations is similarly uncertain, with no evidence that they reduce mortality, hospitalisation or disability[14]. In the UK, NHS health checks for 40-74 year olds have been shown to increase the identification of cardiovascular risk factors in a large untreated population,[15] but their impact of longer-term outcomes is still unclear.

Reducing emergency hospital admissions is a major international concern to contain healthcare costs, but evidence for successful community interventions is limited.[16] While our primary outcome of emergency hospital admission showed no change after introduction of health checks for subjects with ID, evidence for a reduction in potentially preventable admissions was consistent in all our analyses and plausible. Given that admissions for ACSCs represent less than 1 in 5 emergency admissions in the UK,[10] it is unsurprising that we did not detect a change for the broader group. Among adults with ID in our study, admissions for epilepsy contributed about 45% of emergency admissions for ACSCs, so one possible explanation is that health checks are facilitating better overall management of epilepsy and seizures among patients with ID. This would be an important benefit, as improved service provision of ID patients with epilepsy has been identified as a mechanism for reducing excess mortality among all people with ID.[5]

Our study reached a similar conclusion from two different analytic strategies, one based on practice comparisons and the other on individuals. As these used slightly different patient groups and definitions of time, this outcome would not necessarily be expected. For example, individual analyses suggested emergency hospital admissions were rising among ID patients post health check, while practice level analyses showed a fall during 2011-12. The rise in admissions in the same individuals is partly explained by their ageing over time, plus the requirement to be alive at the health check, resulting in deaths only post health check (and associated admissions). By contrast, practice trends were based on a fluid group of all ID
patients aged 18-84 years in each year, keeping average age effectively constant and allowing deaths within the year.

Our study has some limitations. We were not able to comment on the quality or overall content of the health checks that have taken place. Although there is published guidance on what the GP should cover during a health check,[3] a general observation from our data extract is that there is substantial variation in what is recorded, which is likely to mirror what is taking place in the health checks. We have not attempted to make any economic costing of the effectiveness of the health check scheme. A small Scottish trial of nurse delivered health checks for adults with ID demonstrated cost effectiveness compared to standard care.[17] However, they did not include hospitalisation costs, except accident and emergency attendances, which may have led to them underestimating potential economic savings.

The analysis at practice level was unmatched, and likely subject to residual confounding from unmeasured factors at both practice and individual level, as we would expect practices that participate in the DES to be different than those that don’t, and possibly have differing characteristics of ID patients. For example, practices that went on to regularly carry out health checks in our study already had lower emergency hospital admissions rates among their ID patients at the outset in 2009. These practices might have further reduced admissions anyway, and subsequent adoption of health checks may simply be a marker of other improvements in their care over the study period.

In order to control for any practice level changes over time, we matched individuals with ID receiving health checks to population controls in the same practice. This analysis now adjusts for any change (artefact or real) across practice or hospitals during the study. However it fails to account for changes specific to people with ID, that may have happened in the UK in light of several high profile reports during this period.[2,18] Therefore we similarly analysed ID patients without health checks, assigning them a random date instead of a health check date. Since this group showed no fall in ACS admissions compared to their controls, it provided additional evidence for the effectiveness of health checks. This contrasts with our finding that adults with Down’s syndrome increased emergency admissions by 55% post health check, but since a similar increase was seen in Down’s adults without health checks, we concluded the trend was specific to Down’s and not health checks. This increase may reflect the premature ageing associated with Down’s such as early onset Alzheimer’s disease,[19] combined with better survival into middle age in part due to advances in childhood cardiac surgery.[20]

In England an increasing number of adults with ID now live in the community, and as a result, the GP’s role in managing their health has increased. Preliminary work around the time of the introduction of health checks in 2009 in England suggested there were no associated higher costs in terms of service use,[21] however costs implications since are not clear and should be evaluated. It has been argued that regular health checks for adults with ID are an efficient way of closing the health inequality gap that this group may experience, however this may also be widened if more easily managed patients are more likely to get health checks.[22] In our study, the decrease in emergency admission rates for ACSs was more marked (27%) when we directly compared participating with non-participating practices, which suggests that there may be a “practice level benefit” of health checks, where changes in care have
benefited all ID patients within the practice irrespective of whether they have the health check. However this may be an over simplification, as a recent serious case review in the UK into the deaths of two adults with ID found that they had been invited to a health check but had failed to attend.[23] Interestingly, our analysis of individuals suggested that health checks produced the greatest benefit in reducing emergency admission to hospital in those with more severe and complex needs.

In summary, to continue to successfully address issues of health inequality and discrimination for adults with ID, the policy implications from our results are: (1) to increase the practice uptake of the health check DES from current levels (<60%) towards a suggested and necessary target of 90%;[22] (2) to ensure that all eligible adults, especially those with the most severe or complex needs, receive an annual health check within practices who participate in the DES.
What is already known on this subject?

A systematic review of the impact of health checks for people with intellectual disabilities in 2014 concluded that while health checks were “effective in identifying previously unrecognised health needs, including life threatening conditions”, very few studies had “evaluated the extent to which providing health checks for people with intellectual disabilities leads to health benefits either in the short or long term”. We were not aware of any study that used emergency hospitalisations as an outcome when evaluating health checks.

What this study adds?

Whilst there was no evidence to suggest that health checks had an impact on overall emergency hospital admissions for adults with ID, the study did reveal a reduction in preventable emergency hospitalisations after the introduction of health checks. These findings should encourage further implementation of health checks to include all general practices in England, in addition to wider participation within practices already carrying them out.

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Conflicts of Interest

“All [living] authors have completed the Unified Competing Interest form at www.icmje.org/coi_disclosure.pdf (available on request from the corresponding author) which declare: all authors had financial support from the National Institute for Health Research for the submitted work”.

Details of Contributors

SMS conceived the study and led the project from inception until his death. IMC took over leadership on the project and is the guarantor for the paper. IMC undertook the analysis. All authors contributed to the development of the project methodology, interpretation of the results, and drafting of the paper.
Figure 1: Summary of number of practices, adults with ID and matched controls used in analyses

14,060 adults with ID with ≥1 registered day in these practices during 2009-12 irrespective of Health Check

2 Practices with 25-50% of ID adults with health check by end of 2010, or only achieves >50% during 2011-12

3 ID adults must have been registered for 90 days prior to health check and be alive for at least 90 days after it

4 ID adults without health checks were assigned an index date using the distribution of known health check dates

5 Controls subject to same criteria as above using their case’s health check date as index date
Figure 2: Hospital admissions in each quarter during 2009-12 by practice level of participation in health checks
**Table 1:** Summary of adults with ID in each practice by practice level participation in health checks

| Adults with ID summarised at practice level† | All Practices (N=289) | Non participating Practices (N=68) | Partial participating Practices (N=95) | Fully Participating Practices (N=126) |
|--------------------------------------------|-----------------------|-----------------------------------|---------------------------------------|--------------------------------------|
|                                            | Median | IQR     | Median | IQR     | Median | IQR     | Median | IQR     |
| Total registered during 2009-12‡           | 43·0   | 25·0-64·0 | 36·0   | 16·0-50·0 | 46·0   | 31·0-64·0 | 45·0   | 24·0-79·0 |
| Number registered on 1/1/09 only           | 34·0   | 19·0-52·0 | 26·5   | 12·5-39·5 | 34·0   | 23·0-53·0 | 38·0   | 19·0-61·0 |
| % with health Check by end of 2010         | 43·1   | 1·6-65·8  | 0·0    | 0·0-0·0  | 22·2   | 4·3-41·7  | 69·5   | 60·0-80·0 |
| % with health Check by end of 2012         | 66·7   | 28·6-81·8 | 0·0    | 0·0-11·8 | 58·6   | 41·0-68·8 | 81·8   | 74·2-87·9 |
| Mean Age                                   | 41·6   | 38·7-44·8 | 41·9   | 38·9-45·8 | 40·5   | 37·5-43·8 | 42·6   | 39·4-45·0 |
| % Male                                     | 57·6   | 50·0-64·3 | 55·6   | 50·0-64·5 | 58·3   | 50·0-63·2 | 57·5   | 50·0-65·0 |
| % High levels of support needs             | 18·8   | 10·5-27·0 | 15·2   | 8·2-21·6  | 17·4   | 10·2-27·8 | 22·2   | 14·0-30·0 |
| % Communal establishment residence         | 9·7    | 0·0-26·4  | 5·9    | 0·0-23·1  | 8·6    | 0·0-21·4  | 15·8   | 2·3-34·2  |

Note: Fully participating practices had >50% of their ID adults with a health check by end of 2010. Non-participating practices had <25% of their ID adults with a health check by end of 2012. 95 (partial participating) practices did not meet either criterion. 72 of the 289 practices had zero participation by 2010, which fell to 35 by 2012.

† - Medians are calculated among all ID adults registered on 1/1/2009, except for “Number registered during 2009-12”. First, a mean is calculated at practice level, and then a median of the practice means is then calculated.

‡ - Patients who spent at least one day registered during 2009-12.
Table 2: Hospital admissions in 2011-12 vs. 2009-10 by practice level of participation in health checks

| Practice Status                  | Outcome                        | Annual Rate in 2009-10 per 1000 person years | Annual Rate in 2011-12 per 1000 person years | Practice Period IRR† (95% CI) for fully participating vs. non-participating practices‡ | Practice Change in IRR (95% CI) for fully participating practices |
|----------------------------------|--------------------------------|-----------------------------------------------|-----------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------|
| All practices (N=289)            | All Emergency Admissions       | 191·1                                         | 176·7                                         | 0·92 (0·86-0·99)                                                                     | -                                                                   |
|                                  | Emergency ACSCs Only⁰          | 64·9                                          | 58·6                                          | 0·91 (0·82-1·00)                                                                    | -                                                                   |
|                                  | All Elective Admissions*       | 117·1                                         | 119·2                                         | 1·02 (0·95-1·09)                                                                    | -                                                                   |
| Fully participating Practices (N=126) | All Emergency Admissions       | 183·6                                         | 160·6                                         | 0·88 (0·80-0·96)                                                                    | 0·97 (0·78-1·19)                                                   |
|                                  | Emergency ACSCs Only⁰          | 69·2                                          | 56·3                                          | 0·82 (0·72-0·92)                                                                    | 0·74 (0·58-0·95)                                                   |
|                                  | All Elective Admissions*       | 112·4                                         | 114·0                                         | 1·02 (0·92-1·14)                                                                    | 1·02 (0·84-1·25)                                                   |
| Non participating Practices (N=68) | All Emergency Admissions       | 226·9                                         | 205·3                                         | 0·90 (0·75-1·09)                                                                    | 1·00                                                                |
|                                  | Emergency ACSCs Only⁰          | 70·1                                          | 77·1                                          | 1·10 (0·89-1·36)                                                                    | 1·00                                                                |
|                                  | All Elective Admissions*       | 125·9                                         | 127·3                                         | 1·00 (0·85-1·19)                                                                    | 1·00                                                                |

Note: Fully participating practices had >50% of their ID patients with a health check by end of 2010. Non-participating practices had <25% of their ID patients with a health check by end of 2012. 95 practices did not meet either criteria and were excluded from the comparison.

* - Exclude patients with abnormally high elective rates (average > 6/year)
⁺ - For definition of ambulatory care sensitive conditions please refer to E-Table 1
† - This represents the within practice change in admission post health check compared to pre health check estimated from conditional Poisson model
‡ - This represents the within practice post health check change in admissions between the fully participating practices versus the non participating practices estimated from conditional Poisson model
Table 3: Characteristics of registered adult patients with ID by whether they had a health check between April 2009 and March 2013

| Individual characteristic | ID patients with health check | ID patients without health check |
|---------------------------|------------------------------|---------------------------------|
|                           | n   | %     | n   | %     |
| All                       | 7,487 | 100% | 6,922 | 100% |
| Gender                    |      |       |      |       |
| Women                     | 3,183 | 42·5% | 2,889 | 41·7% |
| Men                       | 4,304 | 57·5% | 4,033 | 58·3% |
| Age at health check/index date |      |       |      |       |
| 18-34 years               | 2,579 | 34·5% | 3,159 | 45·6% |
| 35-54 years               | 3,136 | 41·9% | 2,432 | 35·1% |
| 55-84 years               | 1,772 | 23·7% | 1,331 | 19·2% |
| Down’s Syndrome           |      |       |      |       |
| No                        | 6,573 | 87·8% | 6,283 | 90·8% |
| Yes                       | 914   | 12·2% | 639   | 9·2%  |
| Autism Spectrum Disorder  |      |       |      |       |
| No                        | 6,744 | 90·1% | 6,423 | 92·8% |
| Yes                       | 743   | 9·9%  | 499   | 7·2%  |
| High support needs†       |      |       |      |       |
| No                        | 5,452 | 72·8% | 6,031 | 87·1% |
| Yes                       | 2,035 | 27·2% | 891   | 12·9% |
| Lives in communal establishment |      |       |      |       |
| Not recorded              | 5,574 | 74·5% | 6,111 | 88·3% |
| Yes                       | 1,913 | 25·6% | 811   | 11·7% |

† - Has been classed as having Severe or Profound ID by GP or has 2 or more of the following in addition to an ID diagnosis: epilepsy, cerebral palsy or significant mobility problem (wheelchair use or greater problem), severe visual impairment, severe hearing impairment, a continence problem or use of PEG feeding.
### Table 4: Summary of hospital admission rates in adults with ID pre and post health check, or index date for those without health check

| Outcome                                      | Pre-health check | Post health check | Period IRR† (95% CI) | Change in IRR (95% CI) vs. age-sex-practice matched controls‡ |
|----------------------------------------------|------------------|-------------------|----------------------|-------------------------------------------------------------|
|                                              | Total Admissions | Annual Rate/1000  | Total Admissions     | Annual Rate/1000                                           |
| ID patients with health check (n=7,487)      |                  |                   |                      |                                                             |
| All Emergency Admissions                     | 1,673            | 145.7             | 3,840                | 173.2                                                      |
| Emergency ACSCs Only⁰                        | 602              | 52.4              | 1,314                | 59.3                                                       |
| All Elective Admissions*                     | 1,328            | 115.9             | 2,703                | 122.4                                                      |
| ID patients without health check but assigned a random index date (n=6,922) |                  |                   |                      |                                                             |
| All Emergency Admissions                     | 1,836            | 186.0             | 4,263                | 212.2                                                      |
| Emergency ACSCs Only⁰                        | 520              | 52.7              | 1,340                | 66.7                                                       |
| All Elective Admissions*                     | 1,170            | 119.1             | 2,567                | 128.4                                                      |

Mean follow up time was – ID patients with health check: 560 days (pre), 1081 (post). ID patients without health check: 521 days (pre), 1059 (post).

* - Excludes patients with abnormally high elective rates (average > 6/year)

⁰ - For definition of ambulatory care sensitive conditions please refer to E-Table 4

† - This represents the within person change in admission post health check compared to pre health check estimated from conditional Poisson model

‡ - This represents the within person post health check change in admissions between the ID patients and their respective controls (n=46,408 for health check ID patients, n=47,622 for non-health check ID patients) estimated from conditional Poisson model
Table 5: Interaction incidence rate ratios (IRR) comparing the change in emergency hospital admission rates post health check between adults with ID and matched controls, stratified by individual characteristics

| Status at time of health check | ID patients with health check | ID patients without health check |
|-------------------------------|-------------------------------|---------------------------------|
|                               | Change in IRR (95% CI)        | Change in IRR (95% CI)          |
|                               | vs. age-sex-practice matched controls† | vs. age-sex-practice matched controls‡ |
| Gender                        |                               |                                 |
| Women                         | 1·07 (0·92-1·25)              | 1·13 (0·95-1·34)                |
| Men                           | 0·88 (0·76-1·01)              | 0·98 (0·85-1·13)                |
| Age                           |                               |                                 |
| 18-34 years                   | 1·01 (0·81-1·25)              | 0·97 (0·80-1·16)                |
| 35-54 years                   | 0·95 (0·80-1·13)              | 1·12 (0·92-1·34)                |
| 55-84 years                   | 0·96 (0·81-1·14)              | 0·96 (0·78-1·18)                |
| Downs’ Syndrome               |                               |                                 |
| No                            | 0·91 (0·82-1·02)              | 1·01 (0·90-1·14)                |
| Yes                           | 1·55 (1·15-2·08)              | 1·55 (1·08-2·22)                |
| Autism Spectrum Disorder      |                               |                                 |
| No                            | 0·95 (0·85-1·05)              | 1·04 (0·93-1·16)                |
| Yes                           | 1·18 (0·76-1·82)              | 1·25 (0·75-2·08)                |
| High support needs†           |                               |                                 |
| No                            | 1·06 (0·93-1·22)              | 1·03 (0·90-1·17)                |
| Yes                           | 0·80 (0·67-0·95)              | 1·07 (0·85-1·35)                |
| Lives in communal establishment |                               |                                 |
| -Not recorded                 | 0·91 (0·80-1·03)              | 1·02 (0·90-1·15)                |
| -Yes                          | 1·13 (0·92-1·38)              | 1·22 (0·92-1·62)                |

† - Has been classed as having Severe or Profound ID by GP or has 2 or more of the following in addition to an ID diagnosis: epilepsy, cerebral palsy or significant mobility problem (wheelchair use or greater problem), severe visual impairment, severe hearing impairment, a continence problem or use of PEG feeding.
‡ - This represents the within person post health check change in admissions between the ID patients and their respective controls (n=46,408 for health check ID patients, n=47,622 for non-health check ID patients) estimated from conditional Poisson model
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### E-Table 1: Read codes used to define intellectual disability

| Read Code | Description                                      | Used by QOF’s Learning Disability* |
|-----------|--------------------------------------------------|-----------------------------------|
| 13Z3.00   | Low I.Q.                                         |                                   |
| 6664.00   | Mental handicap problem                          |                                   |
| 69DB.00   | Learning disability health exam                   |                                   |
| 918e.00   | On learning disability register                   | Health Check                      |
| 9HB.00    | Learning disabilities administration status       | Register                          |
| 9HB0.00   | Learning disabilities health action plan declined |                                   |
| 9HB1.00   | Learning disabilities health action plan offered  |                                   |
| 9HB2.00   | Learning disabilities health action plan reviewed |                                   |
| 9HB3.00   | Learning disabilities health assessment           | Health Check                      |
| 9HB4.00   | Learning disabilities health action plan completed|                                   |
| 9HB5.00   | Learning disabilities annual health assessment    | Health Check                      |
| 9HB6.00   | Learning disabilities annual health assessment declined |                               |
| 9HB6.11   | Learning disabilities annual health check declined|                                   |
| 9HB7.00   | Did not attend learning disabilities annual health assessment | Health Check |
| 9HB7.11   | Did not attend learning disabilities annual health check |                                   |
| 9hL..00   | Exception reporting: learning disability quality indicators |                               |
| 9hL0.00   | Exc learn disability quality indicators: informed dissent |                               |
| 9hL1.00   | Exc learn disability quality indicators: patient unsuitable |                               |
| 9mA..00   | Learning disability annual health check invitation|                                   |
| 9mA0.00   | Learning disability annual health check verbal invitation |                               |
| 9mA1.00   | Learning disability annual health check telephone invitation |                               |
| 9mA2.00   | Learning disability annual health check letter invitation |                               |
| 9mA2000   | Learning disability annual health check invitation 1st letter |                               |
| 9mA2100   | Learning disability annual health check invitation 2nd letter |                               |
| 9mA2200   | Learning disability annual health check invitation 3rd letter |                               |
| C03..11   | Cretinism                                        |                                   |
| C031.00   | Goitrous cretin                                   |                                   |
| C03z.12   | Cretinism                                        |                                   |
| C372.11   | Lesch-Nyhan syndrome                               |                                   |
| C372000   | Hypoxanthine-guanine-phosphoribosyltransferase deficiency |                           |
| C372011   | Lesch-Nyhan syndrome                               |                                   |
| C372300   | Lesch-Nyhan syndrome                               |                                   |
| C372z00   | Other disorder of purine or pyrimidine metabolism NOS |                                   |
| E141.00   | Disintegrative psychosis                          |                                   |
| E141.11   | Heller’s syndrome                                 |                                   |
| E141000   | Active disintegrative psychoses                   |                                   |
| E141100   | Residual disintegrative psychoses                 |                                   |
| E141z00   | Disintegrative psychosis NOS                      |                                   |
| E3...00   | Mental retardation                                | Register                          |
| E30..00   | Mild mental retardation, IQ in range 50-70        | Register                          |
| E30..11   | Educationally subnormal                           | Register                          |
| E30..12   | Feeble-minded                                     | Register                          |
| E30..13   | Moron                                             | Register                          |
| Read Code | Description                                           | Used by QOF’s Learning Disability* |
|----------|-------------------------------------------------------|----------------------------------|
| E31..00  | Other specified mental retardation                   | Register                         |
| E310.00  | Moderate mental retardation, IQ in range 35-49       | Register                         |
| E310.11  | Imbecile                                             | Register                         |
| E311.00  | Severe mental retardation, IQ in range 20-34         | Register                         |
| E312.00  | Profound mental retardation with IQ less than 20     | Register                         |
| E312.11  | Idiocy                                               | Register                         |
| E31z.00  | Other specified mental retardation NOS               | Register                         |
| E3y..00  | Other specified mental retardation                   | Register                         |
| E3z..00  | Mental retardation NOS                               | Register                         |
| Eu70..00 | [X]Mental retardation                                | Register                         |
| Eu70.11  | [X]Feeble-mindedness                                 | Register                         |
| Eu70.12  | [X]Mild mental subnormality                          | Register                         |
| Eu70000  | [X]Mild mental retardation with statement no or min impairm behav | Register |
| Eu70100  | [X]Mild mental retard sig impairment behav req attent/treatmt | Register |
| Eu70y00  | [X]Mild mental retardation, other impairments of behaviour | Register |
| Eu70z00  | [X]Mild mental retardation without mention impairment behav | Register |
| Eu71.00  | [X]Moderate mental retardation                       | Register                         |
| Eu71.11  | [X]Moderate mental subnormality                      | Register                         |
| Eu71000  | [X]Moderate mental retard with statement no or min impairm behav | Register |
| Eu71100  | [X]Moderate mental retard sig impairment behav req attent/treatmt | Register |
| Eu71y00  | [X]Moderate retard oth behav impair                   | Register                         |
| Eu72.00  | [X]Severe mental retardation                         | Register                         |
| Eu72.11  | [X]Severe mental subnormality                        | Register                         |
| Eu72000  | [X]Sev mental retard with statement no or min impairm behav | Register |
| Eu72100  | [X]Sev mental retard sig impairment behav req attent/treatmt | Register |
| Eu72y00  | [X]Severe mental retardation, other impairments of behaviour | Register |
| Eu72z00  | [X]Sev mental retardation without mention impairment behav | Register |
| Eu73.00  | [X]Profound mental retardation                       | Register                         |
| Eu73.11  | [X]Profound mental subnormality                      | Register                         |
| Eu73000  | [X]Profound ment retrd wth statement no or min impairm behav | Register |
| Eu73100  | [X]Profound mental retard sig impairmt behav req attent/treat | Register |
| Eu73y00  | [X]Profound mental retardation, other impairments of behav | Register |
| Eu73z00  | [X]Prfnd mental retardation without mention impairment behav | Register |
| Eu77y00  | [X]Other mental retardation                          | Register                         |
| Eu77z00  | [X]Other mental retard with statement no or min impairm behav | Register |
| Eu7y100  | [X]Other mental retard sig impairment behav req attent/treatmt | Register |
| Eu7yy00  | [X]Other mental retardation, other impairments of behaviour | Register |
| Eu7yz00  | [X]Other mental retardation without mention impairment behav | Register |
| Eu7z.00  | [X]Unspecified mental retardation                    | Register                         |
| Eu7z.11  | [X]Mental deficiency NOS                             | Register                         |
| Eu7z.12  | [X]Mental subnormality NOS                           | Register                         |
| Eu7z000  | [X]Unsp mental retard with statement no or min impairm behav | Register |
| Eu7z100  | [X]Unsp mentl retard sig impairment behav req attent/treatmt | Register |
| Read Code | Description                                                                                      | Used by QOF’s Learning Disability* |
|-----------|--------------------------------------------------------------------------------------------------|-----------------------------------|
| Eu7zy00  | [X] Unspecified mental retardation, other impairments of behavior                                | Register                          |
| Eu7zz00  | [X] Unspecified mental retardation without mention impairment behavior                           | Register                          |
| Eu81400  | [X] Moderate learning disability                                                                  | Register                          |
| Eu81500  | [X] Severe learning disability                                                                   | Register                          |
| Eu81600  | [X] Mild learning disability                                                                     | Register                          |
| Eu81700  | [X] Profound learning disability                                                                  | Register                          |
| Eu81z00  | [X] Developmental disorder of scholastic skills, unspecified                                     | Register                          |
| Eu81z11  | [X] Learning disability NOS                                                                       | Register                          |
| Eu81z12  | [X] Learning disorder NOS                                                                           | Register                          |
| Eu81z13  | [X] Learning acquisition disorder NOS                                                                | Register                          |
| Eu84112  | [X] Mental retardation with autistic features                                                      |                                   |
| Eu84200  | [X] Rett’s syndrome                                                                                |                                   |
| Eu84300  | [X] Other childhood disintegrative disorder                                                           |                                   |
| Eu84311  | [X] Dementia infantalis                                                                             |                                   |
| Eu84312  | [X] Disintegrative psychosis                                                                       |                                   |
| Eu84313  | [X] Heller’s syndrome                                                                               |                                   |
| Eu84400  | [X] Overactive disorder assoc mental retard/stereotype movts                                      |                                   |
| PJ0..00  | Down’s syndrome - trisomy 21                                                                       |                                   |
| PJ0..11  | Mongolism                                                                                        |                                   |
| PJ0..12  | Trisomy 21                                                                                        |                                   |
| PJ0..13  | Trisomy 22                                                                                        |                                   |
| PJ00.00  | Trisomy 21, meiotic nondisjunction                                                                  |                                   |
| PJ01.11  | Trisomy 21, mitotic nondisjunction                                                                  |                                   |
| PJ02.00  | Trisomy 21, translocation                                                                         |                                   |
| PJ02.11  | Partial trisomy 21 in Down’s syndrome                                                              |                                   |
| PJ0z.00  | Down’s syndrome NOS                                                                               |                                   |
| PJ0z.11  | Trisomy 21 NOS                                                                                     |                                   |
| PJ1..00  | Patau’s syndrome - trisomy 13                                                                      |                                   |
| PJ10.00  | Trisomy 13, meiotic nondisjunction                                                                  |                                   |
| PJ11.00  | Trisomy 13, mosaicism                                                                              |                                   |
| PJ11.11  | Trisomy 13, mitotic nondisjunction                                                                  |                                   |
| PJ12.00  | Trisomy 13, translocation                                                                          |                                   |
| PJ12.11  | Partial trisomy 13 in Patau’s syndrome                                                             |                                   |
| PJ1z.00  | Patau’s syndrome NOS                                                                               |                                   |
| PJ1z.11  | Trisomy 13 NOS                                                                                     |                                   |
| PJ2..00  | Edward’s syndrome - trisomy 18                                                                      |                                   |
| PJ20.00  | Trisomy 18, meiotic nondisjunction                                                                  |                                   |
| PJ21.00  | Trisomy 18, mosaicism                                                                              |                                   |
| PJ21.11  | Trisomy 18, mitotic nondisjunction                                                                  |                                   |
| PJ22.00  | Trisomy 18, translocation                                                                          |                                   |
| PJ22.11  | Partial trisomy 18 in Edward’s syndrome                                                            |                                   |
| PJ2z.00  | Edward’s syndrome NOS                                                                              |                                   |
| PJ2z.11  | TRISOMY 18 NOS                                                                                     |                                   |
| PJ30.00  | Antimongolism syndrome                                                                             |                                   |
| PJ30.11  | Deletion of long arm of chromosome 21                                                               |                                   |
| Read Code  | Description                                      | Used by QOF’s Learning Disability* |
|-----------|--------------------------------------------------|-------------------------------------|
| PJ31.00   | Cri-du-chat syndrome                             |                                     |
| PJ31.11   | Deletion of short arm of chromosome 5           |                                     |
| PJ32.00   | Deletion of short arm of chromosome 4           |                                     |
| PJ32.11   | Wolff - Hirschorn syndrome                       |                                     |
| PJ33100   | Deletion of long arm of chromosome 18           |                                     |
| PJ33111   | 18p- syndrome                                   |                                     |
| PJ33200   | Deletion of short arm of chromosome 18          |                                     |
| PJ33211   | 18q- syndrome                                   |                                     |
| PJ33300   | Smith-Magenis syndrome                           |                                     |
| PJ33400   | Jacobsen syndrome                               |                                     |
| PJ33500   | Greig cephalopolysyndacty syndrome              |                                     |
| PJ33700   | 3p deletion syndrome                            |                                     |
| PJ33800   | Chromosome 4q deletion syndrome                  |                                     |
| PJ33900   | Langer-Giedion syndrome                         |                                     |
| PJ33A00   | Kleefstra syndrome                              |                                     |
| PJ3z.00   | Monosomies and deletions from the autosomes NOS |                                     |
| PJ50.00   | Whole chromosome trisomy syndromes              |                                     |
| PJ50000   | Trisomy 6                                       |                                     |
| PJ50100   | Trisomy 7                                       |                                     |
| PJ50200   | Trisomy 8                                       |                                     |
| PJ50300   | Trisomy 9                                       |                                     |
| PJ50400   | Trisomy 10                                      |                                     |
| PJ50500   | Trisomy 11                                      |                                     |
| PJ50600   | Trisomy 12                                      |                                     |
| PJ50700   | Other trisomy C syndromes                       |                                     |
| PJ50800   | Trisomy 22                                      |                                     |
| PJ50w00   | Whole chromosome trisomy, meiotic nondisjunction|                                     |
| PJ50x00   | Whole chromosome trisomy, mosaicism             |                                     |
| PJ50x11   | Whole chromosome trisomy, mitotic nondisjunction|                                     |
| PJ50y00   | Other specified whole chromosome trisomy syndrome|                                     |
| PJ50z00   | Whole chromosome trisomy syndrome NOS           |                                     |
| PJ51.00   | Partial trisomy syndromes                       |                                     |
| PJ51000   | Major partial trisomy                           |                                     |
| PJ51100   | Minor partial trisomy                           |                                     |
| PJ51200   | 10q partial trisomy syndrome                     |                                     |
| PJ51300   | Trisomy 4p syndrome                             |                                     |
| PJ51400   | Trisomy 9p syndrome                             |                                     |
| PJ51500   | 15q partial trisomy syndrome                     |                                     |
| PJ51z00   | Partial trisomy syndrome NOS                     |                                     |
| PJ52.00   | Trisomies of autosomes NEC                       |                                     |
| PJ52z00   | Trisomy of autosomes NEC NOS                     |                                     |
| PJ9..00   | Mowat-Wilson syndrome                            |                                     |
| PJyy200   | Fragile X chromosome                             |                                     |
| PJyy400   | Fragile X syndrome                               |                                     |
| PKy0.11   | Prader-Willi Syndrome                            |                                     |
| Read Code | Description                                    | Used by QOF’s Learning Disability* |
|-----------|-----------------------------------------------|-----------------------------------|
| PKy0.12   | Prader-Willi syndrome                         |                                   |
| PKy4.00   | William syndrome                              |                                   |
| PKy9300   | Prader - Willi syndrome                       |                                   |
| Pyu0200   | [X]Other reduction deformities of brain       |                                   |
| PyuA000   | [X]Oth specif trisomies & partial trisomies of autosomes |   |
| R034y11   | [D]Global retardation                         |                                   |
| ZS34.00   | Developmental disorder of scholastic skill    |                                   |
| ZS34.11   | Learning disability                           |                                   |

* - This column indicates whether the Read code was used by the Quality and Outcomes Framework (version 26 of the business rules from 2013) to identify patients on its Learning Disability register (“Register”), or used to indicate a health check (“Health Check”). The Read code E818 “[X]Specific learning disability” was subsequently introduced into QOF in 2014-5 and therefore not counted in our study.
### E-Table 2: Read codes used to define severe health needs

| Read Code | Description | Sub-Group* |
|-----------|-------------|------------|
| 13C5.00   | Confined to chair | Mobility severe |
| 13C5.11  | Chairbound | Mobility severe |
| 13C6.00  | Bed-ridden | Mobility severe |
| 13C6.11  | Bedbound | Mobility severe |
| 13CC.00  | Immobile | Mobility severe |
| 13CD.00  | Mobility very poor | Mobility severe |
| 13CE.00  | Mobility poor | Mobility severe |
| 14U5.00  | H/O: gastrostomy | PEG Feeding |
| 1593.00  | H/O: stress incontinence | Continence |
| 16F..00  | Double incontinence | Continence |
| 19E2.00  | Soiling - encopresis | Continence |
| 19E2.11  | Encopresis symptom | Continence |
| 19E2.12  | Soiling symptom | Continence |
| 19E3.00  | Incontinent of faeces | Continence |
| 19E3.11  | Incontinent of faeces symptom | Continence |
| 1A22.00  | Enuresis | Continence |
| 1A22000  | Nocturnal enuresis | Continence |
| 1A22011  | Bedwetting | Continence |
| 1A22100  | Daytime enuresis | Continence |
| 1A23.00  | Incontinence of urine | Continence |
| 1A24.00  | Stress incontinence | Continence |
| 1A24.11  | Stress incontinence - symptom | Continence |
| 1A26.00  | Urge incontinence of urine | Continence |
| 1B75.00  | Loss of vision | Severe Visual Loss |
| 1B77.00  | Deteriorating vision | Severe Visual Loss |
| 1C13.00  | Deafness | Severe Hearing impairment |
| 1C13300  | Bilateral deafness | Severe Hearing impairment |
| 1C17.00  | Hearing aid problem | Severe Hearing impairment |
| 2836.00  | O/E - quadriplegia | Mobility severe |
| 2BL..11  | O/E - deaf | Severe Hearing impairment |
| 2BL3.00  | O/E - significantly deaf | Severe Hearing impairment |
| 2BL4.00  | O/E - very deaf | Severe Hearing impairment |
| 2BL5.00  | O/E - completely deaf | Severe Hearing impairment |
| 2DG..00  | Hearing aid worn | Severe Hearing impairment |
| 2DH0.00  | Uses hearing loop | Severe Hearing impairment |
| 3930.00  | Bowels: incontinent | Continence |
| 3931.00  | Bowels: occasional accident | Continence |
| 3940.00  | Bladder: incontinent | Continence |
| 3941.00  | Bladder: occasional accident | Continence |
| 3960.00  | Dependent: chair/bed transfer | Mobility severe |
| 3980.00  | Immobile | Mobility severe |
| 3981.00  | Independent in wheelchair | Mobility severe |
| 3982.00  | Minimal help in wheelchair | Mobility severe |
| 398A.00  | Dependent on helper pushing wheelchair | Mobility severe |
| Read Code | Description | Sub-Group* |
|-----------|-------------|------------|
| 6688.00   | Registered partially sighted | Severe Visual Loss |
| 6688.11   | Registered partially blind    | Severe Visual Loss |
| 6689.00   | Registered blind               | Severe Visual Loss |
| 6689.11   | Registered severely sight impaired | Severe Visual Loss |
| 668C.00   | Certificate of vision impairment | Severe Visual Loss |
| 668D.00   | Registered sight impaired      | Severe Visual Loss |
| 7007300   | Insertion of auditory implant to brainstem | Severe Hearing impairment |
| 7308400   | Placement of hearing implant in external ear | Severe Hearing impairment |
| 7308500   | Attention to hearing implant in external ear | Severe Hearing impairment |
| 7308600   | Removal of hearing implant from external ear | Severe Hearing impairment |
| 7311A00   | Insert bone anchors subcutaneous bone anchored hearing aid | Severe Hearing impairment |
| 7317C00   | Placement of hearing implant in middle ear | Severe Hearing impairment |
| 7317D00   | Attention to hearing implant in middle ear | Severe Hearing impairment |
| 7317E00   | Removal of hearing implant from middle ear | Severe Hearing impairment |
| 7319.00   | Attachment of bone anchored hearing prosthesis | Severe Hearing impairment |
| 7319000   | Insertion fixtures bone anchored hearing prosthesis Stage 1 | Severe Hearing impairment |
| 7319100   | Insertion fixtures bone anchored hearing prosthesis Stage 2 | Severe Hearing impairment |
| 7319200   | Reduction soft tissue for bone anchored hearing prosthesis | Severe Hearing impairment |
| 7319300   | Attention to fixtures for bone anchored hearing prosthesis | Severe Hearing impairment |
| 7319400   | One stage insert fixtures bone anchored hearing prosthesis | Severe Hearing impairment |
| 7319500   | Fitting external hearing prosthesis bone anchored fixtures | Severe Hearing impairment |
| 7319y00   | Other specified attachment bone anchored hearing prosthesis | Severe Hearing impairment |
| 7319z00   | Attachment of bone anchored hearing prosthesis NOS | Severe Hearing impairment |
| 7617.00   | Gastrostomy operations       | PEG Feeding |
| 7617.12   | Creation of gastrostomy      | PEG Feeding |
| 7617000   | Creation of permanent gastrostomy | PEG Feeding |
| 7617100   | Creation of temporary gastrostomy | PEG Feeding |
| 7617400   | Attention to gastrostomy tube | PEG Feeding |
| 7617500   | Removal of gastrostomy tube  | PEG Feeding |
| 7617600   | Change of gastrostomy tube   | PEG Feeding |
| 7617700   | Maintenance of percutaneous endoscopic gastrostomy tube | PEG Feeding |
| 7617z00   | Gastrostomy operation NOS    | PEG Feeding |
| 7619.11   | Gastrotomy NEC               | PEG Feeding |
| 761E300   | Temporary percutaneous endoscopic gastrostomy | PEG Feeding |
| 761E400   | Permanent percutaneous endoscopic gastrostomy | PEG Feeding |
| 761E600   | Fibreoptic endoscopic percutaneous insert gastrostomy (PEG) | PEG Feeding |
| 761E900   | Fibreoptic endoscopic removal of gastrostomy tube | PEG Feeding |
| 761EA00   | Fibreoptic endoscopic percutaneous insertion of gastrostomy | PEG Feeding |
| 8CJ2.00   | Percutaneous endoscopic gastrostomy feeding | PEG Feeding |
| 8D2..00   | Auditory aid                 | Severe Hearing impairment |
| 8D2..11   | Auditory aid provision       | Severe Hearing impairment |
| 8D2..12   | Hearing aid provision        | Severe Hearing impairment |
| 8D21.00   | Provide head worn hearing aid | Severe Hearing impairment |
| 8D22.00   | Provide body worn hearing aid | Severe Hearing impairment |
| 8D23.00   | Ear fitting hearing aid      | Severe Hearing impairment |
| Read Code | Description                                      | Sub-Group*                          |
|-----------|--------------------------------------------------|-------------------------------------|
| 8D24.00  | Replace hearing aid battery                      | Severe Hearing impairment           |
| 8D25.00  | Physiolog. hearing assistance                    | Severe Hearing impairment           |
| 8D22.00  | Auditory aid NOS                                 | Severe Hearing impairment           |
| 8D3..00  | Visual aid                                       | Severe Visual Loss                  |
| 8D3..13  | Visual aid provision                             | Severe Visual Loss                  |
| 8D31.00  | Physiolog. visual assistance                     | Severe Visual Loss                  |
| 8D32.00  | Visual aid NOS                                   | Severe Visual Loss                  |
| 8D73.00  | Nocturnal bladder warning syst                   | Continence                          |
| 8D73.11  | Enuretic alarm                                   | Continence                          |
| 8D73.12  | Enuresis alarm                                   | Continence                          |
| 8D9..13  | Wheel chair                                      | Mobility severe                     |
| 8D92.00  | Self propelled wheel chair                        | Mobility severe                     |
| 8D93.00  | Pedal powered wheel chair                         | Mobility severe                     |
| 8D94.00  | Powered wheel chair                              | Mobility severe                     |
| 8D95.00  | Wheel chair unspecified                          | Mobility severe                     |
| 8D9A.00  | Attendant powered wheel chair                    | Mobility severe                     |
| 8D9B.00  | Wheel chair seating                              | Mobility severe                     |
| 8E3..00  | Deafness remedial therapy                        | Severe Hearing impairment           |
| 8E3Z.00  | Deafness remedial therapy NOS                    | Severe Hearing impairment           |
| 8F6..11  | Blind rehabilitation                             | Severe Visual Loss                  |
| 8F61.00  | Blind rehabilitation                             | Severe Visual Loss                  |
| 8F62.00  | Blind lead dog rehabilitation                    | Severe Visual Loss                  |
| 8HHC.00  | Referred for wheelchair assessment               | Mobility severe                     |
| 8HIE.00  | Referral to visual impairment multidisciplinary team | Severe Visual Loss                  |
| 8M41.00  | Hearing aid requested                            | Severe Hearing impairment           |
| 9m08.00  | Excluded from diabetic retinopathy screening as blind | Severe Visual Loss                  |
| 9N0b.00  | Seen in hearing aid clinic                        | Severe Hearing impairment           |
| 9NFb.00  | Requires deafblind communicator guide            | Severe Hearing impairment           |
| 9NFb.00  | Requires deafblind communicator guide            | Severe Visual Loss                  |
| 9NID.00  | Seen by visual impairment teacher                | Severe Visual Loss                  |
| 9R43.00  | Wheelchair in need of repair                     | Mobility severe                     |
| 9R44.00  | Wheelchair in good repair                         | Mobility severe                     |
| 9RA..00  | Wheelchair applied for                            | Mobility severe                     |
| A560200  | Rubella deafness                                 | Severe Hearing impairment           |
| E276.00  | Non-organic enuresis                             | Continence                          |
| E276000  | Non-organic primary enuresis                     | Continence                          |
| E276100  | Non-organic secondary enuresis                   | Continence                          |
| E276z00  | Non-organic enuresis NOS                         | Continence                          |
| E277.00  | Non-organic encopresis                           | Continence                          |
| E277000  | Non-organic continuous encopresis                | Continence                          |
| E277100  | Non-organic discontinuous encopresis             | Continence                          |
| E277z00  | Non-organic encopresis NOS                       | Continence                          |
| E311.00  | Severe mental retardation, IQ in range 20-34     | Severe/Profound                     |
| E312.00  | Profound mental retardation with IQ less than 20 | Severe/Profound                     |
| E312.11  | Idiocy                                           | Severe/Profound                     |
| Eu72.00  | [X]Severe mental retardation                     | Severe/Profound                     |
| Read Code | Description                                                                 | Sub-Group*       |
|-----------|------------------------------------------------------------------------------|------------------|
| Eu72.11   | [X]Severe mental subnormality                                                 | Severe/Profound  |
| Eu72000   | [X]Severe mental retardation with statement no or min impairments             | Severe/Profound  |
| Eu72100   | [X]Severe mental retardation sig impairment behav req attent/treatmt           | Severe/Profound  |
| Eu72y00   | [X]Severe mental retardation, other impairments of behaviour                 | Severe/Profound  |
| Eu72z00   | [X]Severe mental retardation without mention impairment behav                | Severe/Profound  |
| Eu73.00   | [X]Profound mental retardation                                               | Severe/Profound  |
| Eu73.11   | [X]Profound mental subnormality                                               | Severe/Profound  |
| Eu73000   | [X]Profound mental retardation with statement no or min impairments           | Severe/Profound  |
| Eu73100   | [X]Profound mental retardation sig impairment behav req attent/treat          | Severe/Profound  |
| Eu73z00   | [X]Profound mental retardation without mention impairment behav              | Severe/Profound  |
| Eu81500   | [X]Severe learning disability                                                | Severe/Profound  |
| Eu81700   | [X]Profound learning disability                                              | Severe/Profound  |
| Eu9y000   | [X]Nonorganic enuresis                                                       | Continence       |
| Eu9y100   | [X]Nonorganic encopresis                                                     | Continence       |
| F132100   | Progressive myoclonic epilepsy                                                | Epilepsy         |
| F132111   | Unverricht - Lundborg disease                                                 | Epilepsy         |
| F137.00   | Symptomatic torsion dystonia                                                 | Cerebral Palsy   |
| F137.11   | Athetoid cerebral palsy                                                      | Cerebral Palsy   |
| F137.12   | Athetosis - congenital                                                        | Cerebral Palsy   |
| F137.13   | Vogt's disease                                                               | Cerebral Palsy   |
| F137000   | Athetoid cerebral palsy                                                      | Cerebral Palsy   |
| F137011   | Vogt's disease                                                               | Cerebral Palsy   |
| F137100   | Double athetosis                                                             | Cerebral Palsy   |
| F137111   | Congenital athetosis                                                          | Cerebral Palsy   |
| F137y00   | Other specified symptomatic torsion dystonia                                  | Cerebral Palsy   |
| F137z00   | Symptomatic torsion dystonia NOS                                              | Cerebral Palsy   |
| F23..00   | Congenital cerebral palsy                                                    | Cerebral Palsy   |
| F23..11   | Congenital spastic cerebral palsy                                            | Cerebral Palsy   |
| F23..12   | Infantile cerebral palsy                                                     | Cerebral Palsy   |
| F23..13   | Littles disease                                                              | Cerebral Palsy   |
| F23..14   | Cerebral atonia                                                              | Cerebral Palsy   |
| F230.00   | Congenital diplegia                                                           | Cerebral Palsy   |
| F230.11   | Paraplegia - congenital                                                      | Cerebral Palsy   |
| F230000   | Congenital paraplegia                                                        | Cerebral Palsy   |
| F230100   | Cerebral palsy with spastic diplegia                                          | Cerebral Palsy   |
| F230z00   | Congenital diplegia NOS                                                       | Cerebral Palsy   |
| F231.00   | Congenital hemiplegia                                                        | Cerebral Palsy   |
| F232.00   | Congenital quadriplegia                                                       | Cerebral Palsy   |
| F232.11   | Tetraplegia - congenital                                                     | Cerebral Palsy   |
| F233.00   | Congenital monoplegia                                                        | Cerebral Palsy   |
| F233.11   | Congenital spastic foot                                                       | Cerebral Palsy   |
| F234.00   | Infantile hemiplegia NOS                                                      | Cerebral Palsy   |
| F23y.00   | Other congenital cerebral palsy                                              | Cerebral Palsy   |
| F23y000   | Ataxic infantile cerebral palsy                                              | Cerebral Palsy   |
| Read Code | Description                                | Sub-Group*             |
|-----------|--------------------------------------------|------------------------|
| F23y100  | Flaccid infantile cerebral palsy           | Cerebral Palsy         |
| F23y200  | Spastic cerebral palsy                     | Cerebral Palsy         |
| F23y300  | Dyskinetic cerebral palsy                  | Cerebral Palsy         |
| F23y400  | Ataxic diplegic cerebral palsy             | Cerebral Palsy         |
| F23y500  | Worster-Drought syndrome                   | Cerebral Palsy         |
| F23y511  | Congenital suprabulbar paresis             | Cerebral Palsy         |
| F23z00   | Other infantile cerebral palsy NOS         | Cerebral Palsy         |
| F240.00  | Quadriplegia                               | Mobility severe        |
| F240.11  | Tetraplegia                                | Mobility severe        |
| F241.00  | Paraplegia                                 | Mobility severe        |
| F241100  | Spastic paraplegia                         | Mobility severe        |
| F242.00  | Diplegia of upper limbs                    | Mobility severe        |
| F243.00  | Monoplegia of lower limb                   | Mobility severe        |
| F244.00  | Monoplegia of upper limb                   | Mobility severe        |
| F25..00  | Epilepsy                                   | Epilepsy               |
| F250.00  | Generalised nonconvulsive epilepsy         | Epilepsy               |
| F250200  | Epileptic seizures - atonic                | Epilepsy               |
| F250300  | Epileptic seizures - akinetic              | Epilepsy               |
| F250500  | Lennox-Gastaut syndrome                    | Epilepsy               |
| F250y00  | Other specified generalised nonconvulsive epilepsy | Epilepsy               |
| F250z00  | Generalised nonconvulsive epilepsy NOS     | Epilepsy               |
| F251.00  | Generalised convulsive epilepsy            | Epilepsy               |
| F251000  | Grand mal (major) epilepsy                 | Epilepsy               |
| F25111   | Tonic-clonic epilepsy                      | Epilepsy               |
| F251200  | Epileptic seizures - clonic                | Epilepsy               |
| F251300  | Epileptic seizures - myoclonic             | Epilepsy               |
| F251400  | Epileptic seizures - tonic                 | Epilepsy               |
| F251500  | Tonic-clonic epilepsy                      | Epilepsy               |
| F251y00  | Other specified generalised convulsive epilepsy | Epilepsy               |
| F251z00  | Generalised convulsive epilepsy NOS        | Epilepsy               |
| F253.00  | Grand mal status                           | Epilepsy               |
| F253.11  | Status epilepticus                         | Epilepsy               |
| F254.00  | Partial epilepsy with impairment of consciousness | Epilepsy               |
| F254000  | Temporal lobe epilepsy                     | Epilepsy               |
| F254100  | Psychomotor epilepsy                       | Epilepsy               |
| F254200  | Psycosensory epilepsy                      | Epilepsy               |
| F254300  | Limbic system epilepsy                     | Epilepsy               |
| F254400  | Epileptic automatism                       | Epilepsy               |
| F254500  | Complex partial epileptic seizure          | Epilepsy               |
| F254z00  | Partial epilepsy with impairment of consciousness NOS | Epilepsy               |
| F255.00  | Partial epilepsy without impairment of consciousness | Epilepsy               |
| F255000  | Jacksonian, focal or motor epilepsy        | Epilepsy               |
| F255011  | Focal epilepsy                             | Epilepsy               |
| F255012  | Motor epilepsy                             | Epilepsy               |
| Read Code | Description                                                                 | Sub-Group* |
|-----------|------------------------------------------------------------------------------|------------|
| F255100  | Sensory induced epilepsy                                                     | Epilepsy   |
| F255200  | Somatosensory epilepsy                                                       | Epilepsy   |
| F255300  | Visceral reflex epilepsy                                                     | Epilepsy   |
| F255311  | Partial epilepsy with autonomic symptoms                                     | Epilepsy   |
| F255400  | Visual reflex epilepsy                                                       | Epilepsy   |
| F255500  | Unilateral epilepsy                                                         | Epilepsy   |
| F255600  | Simple partial epileptic seizure                                            | Epilepsy   |
| F255y00  | Partial epilepsy without impairment of consciousness OS                      | Epilepsy   |
| F255z00  | Partial epilepsy without impairment of consciousness NOS                      | Epilepsy   |
| F257.00  | Kojevnikov’s epilepsy                                                        | Epilepsy   |
| F258.00  | Alcohol-induced epilepsy                                                     | Epilepsy   |
| F25C.00  | Drug-induced epilepsy                                                        | Epilepsy   |
| F25D.00  | Menstrual epilepsy                                                          | Epilepsy   |
| F25E.00  | Stress-induced epilepsy                                                      | Epilepsy   |
| F25F.00  | Photosensitive epilepsy                                                      | Epilepsy   |
| F25X.00  | Status epilepticus, unspecified                                              | Epilepsy   |
| F25y.00  | Other forms of epilepsy                                                      | Epilepsy   |
| F25y000  | Cursive (running) epilepsy                                                   | Epilepsy   |
| F25y100  | Gelastic epilepsy                                                           | Epilepsy   |
| F25y200  | Local structural epileptic syn seizures, local onset                          | Epilepsy   |
| F25y300  | Complex partial status epilepticus                                           | Epilepsy   |
| F25y500  | Panayiotopoulos syndrome                                                     | Epilepsy   |
| F25y600  | Other forms of epilepsy NOS                                                  | Epilepsy   |
| F25z.00  | Epilepsy NOS                                                                 | Epilepsy   |
| F25z.11  | Fit (in known epileptic) NOS                                                 | Epilepsy   |
| F2B.00   | Cerebral palsy                                                               | Cerebral Palsy |
| F2B0.00  | Spastic quadriplegic cerebral palsy                                          | Cerebral Palsy |
| F2B1.00  | Spastic hemiplegic cerebral palsy                                           | Cerebral Palsy |
| F2By.00  | Other cerebral palsy                                                        | Cerebral Palsy |
| F2Bz.00  | Cerebral palsy NOS                                                           | Cerebral Palsy |
| F49..00  | Blindness and low vision                                                     | Severe Visual Loss |
| F49..11  | Impaired vision                                                              | Severe Visual Loss |
| F49..12  | Low vision                                                                  | Severe Visual Loss |
| F49..13  | Partial sight                                                                | Severe Visual Loss |
| F49..14  | Sight impaired                                                               | Severe Visual Loss |
| F490.00  | Blindness, both eyes                                                         | Severe Visual Loss |
| F490000  | Unspecified blindness both eyes                                              | Severe Visual Loss |
| F490100  | Both eyes total visual impairment                                            | Severe Visual Loss |
| F490400  | Better eye: near total VI, Lesser eye: near total VI                         | Severe Visual Loss |
| F490600  | Better eye: profound VI, Lesser eye: total VI                               | Severe Visual Loss |
| F490900  | Acquired blindness, both eyes                                                | Severe Visual Loss |
| F490z00  | Blindness both eyes NOS                                                      | Severe Visual Loss |
| F491.00  | Better eye: low vision, Lesser eye: profound VI                             | Severe Visual Loss |
| F491000  | One eye blind, one eye low vision                                            | Severe Visual Loss |
| F491100  | Better eye: severe VI, Lesser eye: blind, unspecified                         | Severe Visual Loss |
| F491300  | Better eye: severe VI, Lesser eye: near total VI                            | Severe Visual Loss |
| Read Code | Description | Sub-Group* |
|-----------|-------------|------------|
| F491400  | Better eye: severe VI, Lesser eye: profound VI | Severe Visual Loss |
| F491500  | Better eye: moderate VI, Lesser eye: blind, unspecified | Severe Visual Loss |
| F491700  | Better eye: moderate VI, Lesser eye: near total VI | Severe Visual Loss |
| F491z00  | One eye blind, one eye low vision NOS | Severe Visual Loss |
| F492.00  | Low vision, both eyes | Severe Visual Loss |
| F492000  | Low vision, both eyes unspecified | Severe Visual Loss |
| F492200  | Better eye: severe VI, Lesser eye: severe VI | Severe Visual Loss |
| F492300  | Better eye: moderate VI, Lesser eye: low vision unspecified | Severe Visual Loss |
| F492400  | Better eye: moderate VI, Lesser eye: severe VI | Severe Visual Loss |
| F492500  | Better eye: moderate VI, Lesser eye: moderate VI | Severe Visual Loss |
| F492z00  | One eye blind, one eye low vision NOS | Severe Visual Loss |
| F493.00  | Visual loss, both eyes unqualified | Severe Visual Loss |
| F494.00  | Legal blindness USA | Severe Visual Loss |
| F497.00  | Severe visual impairment, binocular | Severe Visual Loss |
| F498.00  | Moderate visual impairment, binocular | Severe Visual Loss |
| F49z.00  | Visual loss NOS | Severe Visual Loss |
| F49z.11  | Acquired blindness | Severe Visual Loss |
| F4H7300  | Cortical blindness | Severe Visual Loss |
| F581211  | Noise induced deafness | Severe Hearing impairment |
| F59..11  | Deafness | Severe Hearing impairment |
| F590.11  | Conductive deafness | Severe Hearing impairment |
| F591.13  | Perceptive deafness | Severe Hearing impairment |
| F591211  | Nerve deafness | Severe Hearing impairment |
| F591400  | Congenital sensorineural deafness | Severe Hearing impairment |
| F591500  | Ototoxicity - deafness | Severe Hearing impairment |
| F591511  | Drug ototoxicity - deafness | Severe Hearing impairment |
| F591800  | Congenital prelingual deafness | Severe Hearing impairment |
| F592.00  | Mixed conductive and sensorineural deafness | Severe Hearing impairment |
| F593.00  | Deaf mutism, NEC | Severe Hearing impairment |
| F594.00  | High frequency deafness | Severe Hearing impairment |
| F595.00  | Low frequency deafness | Severe Hearing impairment |
| F596.00  | Maternally inherited deafness | Severe Hearing impairment |
| F598.00  | Moderate acquired hearing loss | Severe Hearing impairment |
| F599.00  | Severe acquired hearing loss | Severe Hearing impairment |
| F59A.00  | Profound acquired hearing loss | Severe Hearing impairment |
| F59A.11  | Deafened | Severe Hearing impairment |
| F59z.00  | Deafness NOS | Severe Hearing impairment |
| F59z.11  | Chronic deafness | Severe Hearing impairment |
| Fyu9.00  | [X]Cerebral palsy and other paralytic syndromes | Cerebral Palsy |
| Fyu90000 | [X]Other infantile cerebral palsy | Cerebral Palsy |
| Fyu91000 | [X]Other specified paralytic syndromes | Cerebral Palsy |
| FyuU000  | [X]Deaf mutism, not elsewhere classified | Severe Hearing impairment |
| K198.00  | Stress incontinence | Continence |
| K586.00  | Stress incontinence - female | Continence |
| Kyu5A000 | [X]Other specified urinary incontinence | Continence |
| P40z.11  | Deafness due to congenital anomaly NEC | Severe Hearing impairment |
| Read Code  | Description                                           | Sub-Group*     |
|-----------|-------------------------------------------------------|----------------|
| R00A.00  | [D] Poor mobility                                      | Mobility severe|
| R00C.00  | [D]Immobility                                         | Mobility severe|
| R076.00  | [D]Incontinence of faeces                             | Continence     |
| R076000  | [D]Encopresis NOS                                      | Continence     |
| R076100  | [D]Sphincter ani incontinence                         | Continence     |
| R076z00  | [D]Incontinence of faeces NOS                         | Continence     |
| R083.00  | [D]Incontinence of urine                              | Continence     |
| R083000  | [D]Enuresis NOS                                        | Continence     |
| R083100  | [D]Urethral sphincter incontinence                    | Continence     |
| R083200  | [D] Urge incontinence                                 | Continence     |
| R083z00  | [D]Incontinence of urine NOS                          | Continence     |
| SJ15.12  | Deafness - traumatic - NOS                            | Severe Hearing impairment |
| Z1J..00  | Procedures to aid continence                          | Continence     |
| Z6R3.00  | Wheelchair dancing therapy                            | Mobility severe|
| Z6R8100  | Wheelchair sport                                      | Mobility severe|
| Z6X1.00  | Wheelchair transfer practice                          | Mobility severe|
| Z6Z..00  | Wheelchair education                                  | Mobility severe|
| Z6Z1.00  | Wheelchair use training                               | Mobility severe|
| Z6Z200   | Propelling wheelchair training                         | Mobility severe|
| Z6Z1300  | Controlling electric wheelchair training              | Mobility severe|
| Z8B5.00  | Ability to use hearing aid                            | Severe Hearing impairment |
| Z8B5100  | Able to use hearing aid                               | Severe Hearing impairment |
| Z8B5200  | Unable to use hearing aid                             | Severe Hearing impairment |
| Z8B5300  | Does use hearing aid                                  | Severe Hearing impairment |
| Z8B5311  | Uses hearing aid                                      | Severe Hearing impairment |
| Z8B5400  | Does not use hearing aid                              | Severe Hearing impairment |
| Z8B5500  | Difficulty using hearing aid                          | Severe Hearing impairment |
| Z911.00  | Hearing aid procedure                                 | Severe Hearing impairment |
| Z911100  | Fit hearing aid                                       | Severe Hearing impairment |
| Z911300  | Adjust hearing aid settings                           | Severe Hearing impairment |
| Z911400  | Changing hearing aid battery                          | Severe Hearing impairment |
| Z911500  | Checking hearing aid                                  | Severe Hearing impairment |
| Z911700  | Switching on hearing aid                              | Severe Hearing impairment |
| Z911800  | Turning off hearing aid                               | Severe Hearing impairment |
| Z911900  | Putting on hearing aid                                | Severe Hearing impairment |
| Z911A00  | Listening for feedback whistle of hearing aid         | Severe Hearing impairment |
| Z911B00  | Attention to hearing aid                              | Severe Hearing impairment |
| Z911E00  | Fit ear mould for existing hearing aid                | Severe Hearing impairment |
| Z96..00  | Provision for visual and hearing impairment           | Severe Visual Loss|
| Z961.00  | Provision of guide help for visual and hearing impairment | Severe Visual Loss |
| Z9E2.00  | Optical low vision aid provision                      | Severe Visual Loss|
| Z9E3.00  | Provision of optical low vision aid - near            | Severe Visual Loss|
| Z9E3100  | Provision of magnifier low vision aid - near          | Severe Visual Loss|
| Z9E3200  | Provision of low vision hand magnifier                | Severe Visual Loss|
| Z9E3300  | Provision of low vision stand magnifier               | Severe Visual Loss|
| Z9E3500  | Provision of spectacle low vision aid - near          | Severe Visual Loss|
| Read Code | Description                                      | Sub-Group*          |
|-----------|--------------------------------------------------|---------------------|
| Z9E3600  | Provision of telescopic spectacles               | Severe Visual Loss  |
| Z9E3700  | Provision of spectacle magnifier                 | Severe Visual Loss  |
| Z9E3900  | Near low vision aid - clip-on spectacle magnifier| Severe Visual Loss  |
| Z9E3A00  | Provision of spectacle telescope                 | Severe Visual Loss  |
| Z9E3B00  | Near low vision aid - integral spectacle telescope| Severe Visual Loss  |
| Z9E3C00  | Near low vision aid - clip-on spectacle telescope| Severe Visual Loss  |
| Z9E3D00  | Near low vision aid - extra cap for telescope    | Severe Visual Loss  |
| Z9E3E00  | Provision of headband telescope                  | Severe Visual Loss  |
| Z9E4.00  | Provision of optical low vision aid - distance   | Severe Visual Loss  |
| Z9E5.00  | Provision of non-optical low vision aid          | Severe Visual Loss  |
| Z9E5200  | Provision of closed circuit television           | Severe Visual Loss  |
| Z9E5300  | Provision of image intensifier                    | Severe Visual Loss  |
| Z9E5400  | Provision of ancillary low vision aid            | Severe Visual Loss  |
| Z9E5700  | Provision of work board                          | Severe Visual Loss  |
| Z9E6.00  | Provision of visual appliance                    | Severe Visual Loss  |
| Z9E6500  | Provision of audiotaped services                 | Severe Visual Loss  |
| Z9E6600  | Provision of talking book                        | Severe Visual Loss  |
| Z9E8100  | Hearing aid provision                            | Severe Hearing Impairment |
| Z9E8111  | Auditory aid provision                           | Severe Hearing Impairment |
| Z9E.A0.00 | Provision of incontinence appliance              | Continence          |
| Z9E1A00  | Provision of nocturnal bladder warning system    | Continence          |
| Z9E1A11  | Provision of enuresis alarm                      | Continence          |
| Z9E1A12  | Provision of enuretic alarm                      | Continence          |
| Z9E4H00  | Provision of wheelchair                          | Mobility severe     |
| Z9MO.00  | Enuresis support                                 | Continence          |
| ZC65200  | Gastrostomy feeding                              | PEG Feeding         |
| ZC65300  | Percutaneous endoscopic gastrostomy feeding      | PEG Feeding         |
| ZC65311  | PEG - Percutaneous endoscopic gastrostomy feeding| PEG Feeding         |
| ZC65400  | Button gastrostomy feeding                       | PEG Feeding         |
| ZC65500  | Jejunostomy feeding                              | PEG Feeding         |
| ZE83200  | Hearing for loud voice impaired                  | Severe Hearing Impairment |
| ZE84200  | Hearing for voice impaired                       | Severe Hearing Impairment |
| ZE87.00  | Hearing loss                                     | Severe Hearing Impairment |
| ZE87.11  | Deafness                                         | Severe Hearing Impairment |
| ZE87.13  | Hard of hearing                                  | Severe Hearing Impairment |
| ZE87.16  | HL - Hearing loss                                | Severe Hearing Impairment |
| ZE87.17  | HOH - Hard of hearing                            | Severe Hearing Impairment |
| ZL22400  | Under care of continence nurse                   | Continence          |
| ZN56800  | Blind telephone user                             | Severe Visual Loss  |
| ZN56900  | Deaf telephone user                              | Severe Hearing Impairment |
| ZO2..00  | Unable to mobilise                               | Mobility severe     |
| ZO4..00  | Does not mobilise                                | Mobility severe     |
| ZO72..00 | Unable to mobilise indoors                       | Mobility severe     |
| ZO74..00 | Does not mobilise indoors                        | Mobility severe     |
| ZO75..00 | Difficulty mobilising indoors                    | Mobility severe     |
| ZO92..00 | Unable to mobilise using mobility aids           | Mobility severe     |
| Read Code | Description                                      | Sub-Group*
|-----------|--------------------------------------------------|----------------
| ZO93.00   | Does mobilise using aids                         | Mobility severe |
| ZO94.00   | Does not mobilise using mobility aids           | Mobility severe |
| ZO96.00   | Ability to mobilise using wheelchair             | Mobility severe |
| ZO96.11   | Wheelchair mobility                              | Mobility severe |
| ZO96100   | Able to mobilise using wheelchair                | Mobility severe |
| ZO96200   | Unable to mobilise using wheelchair              | Mobility severe |
| ZO96300   | Does mobilise using wheelchair                   | Mobility severe |
| ZO96311   | Mobilises using wheelchair                       | Mobility severe |
| ZO96400   | Does not mobilise using wheelchair               | Mobility severe |
| ZO96500   | Difficulty mobilising using wheelchair           | Mobility severe |
| ZOC6200   | Unable to get in and out of a chair              | Mobility severe |
| ZOC6400   | Does not get in and out of a chair               | Mobility severe |
| ZOC8200   | Unable to get out of a chair                     | Mobility severe |
| ZOC8400   | Does not get out of a chair                      | Mobility severe |
| ZOC9200   | Unable to get on and off a bed                    | Mobility severe |
| ZOC9400   | Does not get on and off a bed                     | Mobility severe |
| ZOCA200   | Unable to get on a bed                           | Mobility severe |
| ZOCB200   | Unable to get off a bed                          | Mobility severe |
| ZOCB400   | Does not get off a bed                           | Mobility severe |
| ZOD2.00   | Unable to move in bed                            | Mobility severe |
| ZOD4.00   | Does not move in bed                             | Mobility severe |
| ZOD6200   | Unable to roll over in bed                       | Mobility severe |
| ZOD6211   | Unable to turn over in bed                       | Mobility severe |
| ZOD7500   | Difficulty turning onto side in bed              | Mobility severe |
| ZOD8200   | Unable to move up and down bed                    | Mobility severe |
| ZT12711   | Voice associated with hearing loss               | Severe Hearing impairment |
| ZV44100   | [V]Has a gastrostomy                             | PEG Feeding     |
| ZV45G00   | [V]Presence of an external hearing aid           | Severe Hearing impairment |
| ZV45N00   | [V]Bone anchored hearing aid in situ             | Severe Hearing impairment |
| ZV46200   | [V]Dependence on wheelchair                      | Mobility severe |
| ZV4L011   | [V]Poor mobility                                | Mobility severe |
| ZV53200   | [V]Fitting or adjustment of hearing aid          | Severe Hearing impairment |
| ZV53800   | [V]Fitting or adjustment of wheelchair           | Mobility severe |
| ZV53D00   | [V]Adjustment and management of implanted hearing device | Severe Hearing impairment |
| ZV55100   | [V]Attention to gastrostomy                      | PEG Feeding     |

* - To be classed as having severe health needs, must be “Severe/Profound” or have 2 or more of the following in addition to an ID diagnosis: epilepsy, cerebral palsy or significant mobility problem, severe visual impairment, severe hearing impairment, a continence problem or use of PEG feeding.
**E-Table 3:** Read codes used to identify communal or shared living accommodation

| Read Code | Description |
|-----------|-------------|
| 13F4.00   | Warden attended |
| 13F4.11   | Lives in warden controlled accommodation |
| 13F4000   | Resident in sheltered accommodation |
| 13F5.00   | Part III accommodation |
| 13F5.11   | Part 3 accommodation |
| 13F5100   | Part III accommodation arranged |
| 13F5111   | Part 3 accommodation arranged |
| 13F5200   | Resident in part III accommodation |
| 13F6.00   | Nursing/other home |
| 13F6100   | Lives in a nursing home |
| 13F7.00   | Residential institution |
| 13F7100   | Lives in a welfare home |
| 13F7200   | Lives in an old peoples home |
| 13F7300   | Lives in a childrens home |
| 13F7400   | Admitted to a children's home |
| 13F8100   | Long stay hospital inpatient |
| 13F9.00   | Living in hostel |
| 13F9.11   | Living in sheltered accommodation |
| 13FK.00   | Lives in a residential home |
| 13FS.00   | Long stay hospital inpatient |
| 13FT.00   | Lives in an old peoples home |
| 13FV.00   | Lives in a welfare home |
| 13FX.00   | Lives in care home |
| 13FY.00   | Lives in a children's unit |
| Z177100   | 24 hour care |
| Z177500   | Custodial care |
| Z177C00   | Residential care |
| Z177D00   | Local authority residential care |
| Z177D11   | LA - local authority residential care |
| ZU37.00   | Lives in a community |
| ZU37100   | Lives in a school community |
| ZU37200   | Lives in boarding school |
| ZV60600   | [V] Institution resident |
| ZV60611   | [V] Boarding school resident |
| ZV60700   | [V] Sheltered housing |
| ZU37100   | Lives in a school community |
| Conditions                                           | ICD-10 Code                                                                 |
|-----------------------------------------------------|-----------------------------------------------------------------------------|
| Angina                                              | I20, I24.0, I24.8-I24.9                                                    |
| Aspiration                                          | J69.0, J69.8                                                               |
| Asthma                                              | J45-J46                                                                   |
| Cellulitis                                          | L03-L04, L08, L88, L98.0, L98.3                                           |
| Congestive heart failure                            | I11.0, I50, J81                                                           |
| Constipation                                        | K59.0                                                                     |
| Convulsions/epilepsy                                | G40-G41, R56, O15                                                         |
| Chronic obstructive pulmonary disease (COPD)         | J41-J44, J47                                                              |
| Dehydration & gastroenteritis                       | E86, K52.2, K52.8, K52.9                                                 |
| Dental conditions                                   | A69.0, K02-K06, K08, K09.8, K09.9, K12-K13                               |
| Diabetes complications                              | E10.0-E10.8, E11.0-E11.8, E12.0-E12.8, E13.0-E13.8, E14.0-E14.8          |
| Ear, nose and throat infections                     | H66-H67, J02-J03, J06, J31.2                                              |
| Gangrene                                            | R02                                                                       |
| Gastro-oesophageal reflux disease                   | K21                                                                       |
| Hypertension                                        | I10, I11.9                                                                |
| Iron deficiency anaemia                             | D50.1, D50.8-D50.9                                                        |
| Influenza                                           | J10-J11                                                                   |
| Nutritional deficiencies                            | E40-E43, E55, E64.3                                                       |
| Pelvic inflammatory disease                         | N70, N73-N74                                                              |
| Perforated/bleeding ulcers                          | K25.0-K25.2, K25.4-K25.6, K26.0-K26.2, K26.4-K26.6, K27.0-K27.2, K27.4-K27.6, K28.0-K28.2, K28.4-K28.6 |
| Pneumonia & other acute lower respiratory tract infection (LRTI) | J13-J14, J15.3-J15.4, J15.7, J15.9, J16.8, J18.1, J18.8, J20-J20.2, J20.8, J20.9, J22 |
| Tuberculosis & other vaccine preventable            | A15-A16, A19, A35-A37, A80, B05-B06, B16.1, B16.9, B18.0-B18.1, B26, G00.0, M01.4 |
| Urinary tract infection (UTI)/pyelonephritis        | N10-N12, N13.6, N39.0                                                     |