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**Indicator Supporting Documentation**

**IAP00368 Deaths from venous thromboembolism (VTE) related events 90 days post discharge from hospital**

Indicator Assurance Service

 **Methodology Review Group**

**Applications for consideration**

**6th February 2014**

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**Introduction**

Indicators to discuss:

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| * Deaths from recorded venous thromboembolism (VTE) during admission and within 90 days of discharge from hospital
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| * CCG OIS - The proportion of patients recovering to their previous levels of mobility / walking ability at i. 30 days and ii. 120 days
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| * Delayed Transfers of Care - Proportion of beds occupied by delayed transfer patients in provider organisations
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| **Initial Indicator Title** | **Deaths from recorded venous thromboembolism (VTE) during admission and within 90 days of discharge from hospital** | IAS Ref Code: | IAP00368 |
| Indicator Set | NHS OF |  |  |

MRG recommendations (9th January 2014) and responses:

1. **Was any consideration given to ‘casemix’ as I assume there is a difference between a death in a seriously ill cancer patient who may well die from other aspects of their condition anyway, and someone who has a relatively simple operation and develops a VTE as a result;**

Yes, the indicator will include VTE in any position on the death certificate and as long as coding is consistent it will be meaningful. We know there will be medical and surgical cases but no overall impact is expected on outcomes. We agree that even when equally effective prevention and treatment of VTE is given some patients are more likely to die from VTE than others. But we do not believe this is a problem for this indicator, as it is an outcome framework measure and so will not be used to compare commissioning populations/providers with different casemix, simply to monitor improvement from national (and later local) baselines. It is conceivable that increasing rates of serious comorbidities would create a small natural tendency for this indicator to rise over time if there were no improvement in prevention and treatment of VTE, but as the research evidence presented to the group indicates the scope for reductions in VTE deaths after hospital admission through improvement in prevention and treatment is substantial, we are confident it can be used to demonstrate improvement from baseline without casemix adjustment.

1. **Are day cases included? [I noted that in the Lester paper they gave different results].**

Yes, day cases are still classed as an admission and risk assessed, these are large in number now and too complex to exclude. In addition, the borderline between what cases are treated as day cases and inpatients varies between hospitals and the proportion of day cases constantly increases. Including both therefore future-proofs the indicator.

1. **That I think it would be better to consider calling it ‘Deaths from recorded VTE…’ as we (clearly) can’t say anything about unrecorded VTE.**

Okay, the indicator will be 'Deaths from recorded VTE during admission and within 90 days of discharge from hospital'. Whilst we are content with this we would ask the group to confirm that referring to recorded deaths rather than deaths is consistent with other indicators that rely on death certification.

1. **Regarding Standardisation – if the indicator is being looked at over time, would like to see breakdown by age (from a future proofing perspective)**

We are requesting data from HSCIC to allow us to consider standardisation, which we agree would future-proof the indicator. However, as the research evidence presented to the group indicates the scope for reductions in VTE deaths after hospital admission through improvement in prevention and treatment is substantial, we are confident the indicator can be used to demonstrate improvement from baseline even without age adjustment.

1. **How does the indicator proposed take us closer to the stated rationale than a straight forward mortality from VTE?**

The indicator has been defined in this way to ensure it is measuring a key patient safety outcome, and not just a effectiveness point. If the indicator was intended as an indicator of effectiveness of healthcare, straightforward mortality would be appropriate. The indicator has been defined in this way to ensure it is measuring a key aspect of patient safety for the safety domain of the outcomes framework. Linking deaths from VTE to a recent hospitalisation increases the proportion of deaths in the indicator where an omission of prophylaxis or errors in diagnosis or treatment are likely to contribute to the outcome, and ensures exclusion of patients who had no recent contact with hospital services and where therefore no clear opportunity to protect their safety would have existed.

1. **As it stands a range of data quality and coding concerns, along with interpretation concerns (is the death 90 days post admission the result of an unknown vte pre admission or a reflection of poor care whilst in hospital is key and as I understand it separating these out not possible) make this questionable as a national indicator. If this were to appear in NHS OF as a single year, then we would want to compare the figure – over time, and disaggregated to CCG level. Both of these raise significant concerns regarding standardisation (as the application notes) and limit the value of the proposed measure as it stands.**

The indicator does not rely on the quality of HES data coding (all hospital admissions are included). It does rely on the quality of death certification data. We are unsure if the indicator group believes death certification data is generally too unreliable for indicator use (we assume not) or believes there are particular issues with VTE recording on death certificates. If the latter, we think there may be a misunderstanding. There has in the past been speculation that VTE death certification was seriously inaccurate, as a much higher figure of 25,000 VTE deaths annually in the UK was repeatedly cited. The source of this figure was inaccurate evidence from an industry representative to a parliamentary select committee; the actual research literature suggest that the deaths recorded in the UK are at the level expected from international studies. A possible additional source of misunderstanding is incidental findings of VTE as post-mortem (especially where patients have been immobile in their last days of life); these may be missed in patients not subject to post-mortem, but as these were not a cause of death would not have an effect on the data quality for this indicator which is drawn from part 1 of death certification. See notes above on standardisation by comorbidities or age. Comparison over time is the only purpose of the indicator, and we would be content for it to be approved as a national-level indicator, with disaggregation to CCG subject to a further application

1. **Regarding the use of population est. as the denominator. I wasn't clear and wasn't entirely convinced the population at risk was all, not just those who had an admission.**

The denominator is all admissions.

1. **“The main improvement action is to drive down the number of deaths from VTE” - Would a rate of death per head not do this just as well?**

See response to point 5 above.

1. **“it is expected that risk assessment will increase” - There is a specific process indicator that looks at this and is more appropriate**

We will remove this statement.

1. **“ and VTE coding will improve” - Evidence presented does not support that there is an issue with coding completeness, would this statement be better worded as VTE diagnosis rates in the living will improve? Is it possible to improve VTE diagnosis rates in the living? I understood there are clinical barriers to achieving this.**

We will remove this statement.  The indicator relies only on coding of death certification. See point 6.

1. **There seems to be an assumption that a patient dying 90 days from discharge is a lost opportunity, what if prophylaxis was not appropriate at discharge (e.g. haemorrhagic stroke)? what if DVT or risk of was not present at discharge? Have the impact of these 2 areas been assessed?**

Yes, this has been considered - based on the Million Women Study we have a handle on inappropriate prophylaxis and measure it through the Safety Thermometer. We appreciate that not every patient should receive prophylaxis and that not every death from VTE is preventable. The indicator addresses an outcome where there is good evidence that safer care can improve outcomes; we do not believe indicator criteria requires a condition to be entirely preventable.

1. **The evidence base of 90 days post admission from the QuORU study there was no significant benefit of VTE assessment for day cases this isn’t reflected in the numerator.**

We have included day cases in the indicator as per the earlier point, it would be too difficult to exclude this large number of cases. The borderline between what cases are treated as day cases and inpatients varies between hospitals and the proportion of day cases constantly increases. Including both therefore future-proofs the indicator.

1. **The various mentions of under-recording of incidence should be changed to under-diagnosis of incidence in my opinion.**

This will be changed.

1. **It isn’t appropriate to deviate from National Clinical Advice on coding when looking at HES data, this is due to the training coders receive follows this advice – so all things being correct, coders will interpret clinical notes to specific codes based on National Clinical Advice rather than clinical knowledge. This will affect the contextual indicators as alternative coding advice has been sought – contextual indicators may over report VTE, national advice is likely to under report but be robust in those it does report.**

The indicator does not rely on the quality of HES data coding (all hospital admissions are included). It does rely on the quality of death certification data. We suggested the publication of various contextual indicators that should address this. After the MRG meeting, clinical coders expressed concern that VTE isn't a code expressed in ICD-10, it is not a disease entity, but a term that encompasses PE and DVT, but this isn't explicit in ICD-10. This isn't considered a concern for this indicator.

Revised paperwork:

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| Introduction |
| Mortality rate from recorded venous thromembolism (VTE) that occurred during admission and within 90 days of discharge from hospital, per 100,000 resident population.The reason for hospital stay (diagnosis/procedure) is not restricted to VTE related episodes and includes day cases. Such deaths are those where VTE is specified on the Medical Certificate of Cause of Death (MCCD) as being one of the conditions leading to, or directly causing death (Part 1, sub-sections a-c).There is currently no other indicator that measures the outcomes for patients in hospital who subsequently die from a VTE. This new patient safety measure considers a crucial outcome, death, and should drive efforts to improve the prevention, detection and treatment of VTE before it causes death. |

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| Indicator Details |  |
| Rationale / usefulness  | The main improvement action is to drive down the number of deaths from VTE.In addition to the main indicator, ‘deaths from VTE’, the following ‘contextual indicators’ are suggested to sit alongside this to provide further detail as follows – 1. the number of diagnoses/history of VTE recorded for hospital episodes (for this I would say in any position, not just primary),
2. the number of people who had a VTE diagnosed or history and who died from a VTE or VTE related condition within 90 days of discharge
3. and the total number of people that died from a VTE or related condition where there was no record of VTE or history of VTE within 90 days of discharge (if 2 and 3 are added together, it will give the number of people in total who died from a VTE within 90 days of discharge)

The time period – during admission and within 90 days post discharge has been chosen, as opposed to 30 or 60 days, as there is evidence to suggest that VTE after surgery is substantially increased in the first 12 postoperative weeks (see Million Women study and more recently the QUORU study – attached).This new indicator is a further step in the development of a set of robust patient safety outcome measures to monitor care in hospital.Prevention of VTE associated with hospitalisation is a key patient safety priority for hospitals.This supersedes a previous definition for a VTE indicator on the ‘incidence of healthcare-related VTE’. This is because distinguishing between healthcare and community-related VTE proved unreliable in the originally intended data source – Hospital Episode Statistics (HES). Measuring death as an outcome, by linking HES with ONS Mortality data, should also drive efforts to improve the prevention, detection and treatment of VTE before it causes death. |
| Data source | Hospital Episode Statistics (HES) – HSCIC and Mortality Statistics by cause – ONS, from 2007-08. |
| Construction  | ***Summary description of the calculation:***The number of adults who were admitted to hospital for any reason (NOT just episodes where VTE had been diagnosed) who subsequently died up to 90 days post discharge according to the Medical Certificate of Cause of Death (MCCD) where VTE was one of the conditions leading to, or directly causing death (part 1, sub-sections a to c) per 100,000 hospital admissions.This indicator looks at ADULTS ONLY.***Calculation type:*** Rate per 100,000 hospital admissions***Denominator:*** The total number of hospital admissions.***Numerator:***Annual figure of the number of deaths during admission and 90 days post discharge, for a particular financial year, from hospital where cause of death is VTE – derived from HES data on adult inpatient admissions (for any reason) and data from death certificates.A VTE death is defined as one in which a death meets two criteria:1. one of the listed VTE ICD-10 codes appear anywhere in Part 1 of the Medical Certificate Cause of Death; and

is associated with a hospital admission with any diagnosis List of ICD-10 codes for diagnosis of VTE.These are the codes agreed by ‘experts’, including the CMO’s Expert Working Group historically. These codes are utilised in relevant peer-reviewed publications as per the attachments to this application.**ICD10 Code Name**I260 Pulmonary embolism with mention of acute corpulmonaleI269 Pulmonary embolism without mention of acute corpulmonaleI800 Phlebitis/thrombophlebitis superficial vessels of lower extremitiesI801 Phlebitis and thrombophlebitis of femoral veinI802 Phlebitis/thrombophlebitis of other deep vessels of lower extremitiesI803 Phlebitis and thrombophlebitis of lower extremities, unspecifiedI808 Phlebitis and thrombophlebitis of other sitesI809 Phlebitis and thrombophlebitis of unspecified siteI821 Thrombophlebitis migransI822 Embolism and thrombosis of vena cava1823 Embolism and thrombosis of renal vein1828 Embolism and thrombosis of other specified veins1829 Embolism and thrombosis of unspecified veinO222 superficial thrombophlebitis in pregnancy –O223 Deep phlebothrombosis in pregnancyO229 Venous complication in pregnancy, unspecifiedO871 Deep phlebothrombosis in the puerperiumO87.0 Superficial thrombophlebitis in the puerperiumO87.9 Venous complication in the puerperium, unspecifiedO88.2 Obstetric blood-clot embolism – covers obstetric/puerperal (pulmonary) embolism NOS***Statistical Methods / Risk adjustment variables:***Initially a National presentation of data is required and therefore no standardisation. This is a first step in the process. Over time, as standardisation methods are develop, we would look to present further breakdowns of the figures and employ standardisation techniques to control for age and gender as there are well established associations between VTE and age and VTE and gender. An association with deprivation was considered but there is no current evidence linking VTE risk with deprivation.For age groups (ADULTS only) - 19-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64, 65-69, 70-74, 75-79, 80-84, 85+***Other (Quality assurance/interpretation/known limitations):***More information about the HES-ONS linked dataset, including the methodology used for linkage is available at http://www.hscic.gov.uk/article/2677/Linked-HES-ONS-mortality-data. Both HES and ONS Mortality data are published on a provisional basis monthly, with annual refreshes (financial year for HES data and calendar year for ONS data) to provide a finalised position on the monthly data. There is a very small (less than 1%) difference between the provisional and final ONS figures. For the purposes of the NHS OF, only the annual refresh data will be used initially. There is a wider workstream progressing looking at the feasibility of using more frequent provisional data. If this proves fruitful, it could be considered for this indicator in the future. |
| Potential Issues | VTE is difficult to diagnose even after death, and interpretation is difficult, so it is hoped that this indicator will improve diagnosis rates.Risk of gaming by some providers in terms of them not coding episodes as VTE but something else so their numbers appear lower.This indicator does not rely on the quality of HES data coding as all hospital admissions are included. It does rely on accurate recording of the cause of death on the death certification, which is a usually accepted source of information for other approved indicators in the NHS Outcomes Framework. Research literature actually suggests that the deaths recorded in the UK are at the level expected from international studies.Death certification is an accepted source of information on cause of death, this indicator uses this data linked to HES – the mortality-HES linked file. In this file, patients in the two databases are matched using the unique identifier, HESID. They are then merged into one mortality master file to ensure one record per patient. Almost 95% of deaths show the same date in HES and ONS based on the linked mortality data. |
| Supporting DocumentsProvide links to any additional documentation used to support discussion at MRG | * NICE Clinical Guideline CG92 <http://www.nice.org.uk/nicemedia/live/12695/47195/47195.pdf>
* CHEST article - <http://www.ncbi.nlm.nih.gov/pubmed/23681495>
* Clinical coding for venous thromboembolism – A report on the findings of a review of clinical coding for VTE undertaken at Taunton & Somerset NHS FT (electronic copy attached to application)
* HEART article - <http://heart.bmj.com/content/early/2013/09/13/heartjnl-2013-304479.abstract>
* Incidence of and mortality from venous thromboembolism in a real-world population: The Q-VTE Study Cohort, The American Journal of Medicine.
* Duration and magnitude of the postoperative risk of venous thromboembolism in middle aged women: prospective cohort study, Sweetland et al, BMJ, 2009.
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| Additional Information / Sample Data :Clinical advice has been provided by members of the VTE Programme Board, which is responsible for the National VTE Prevention Programme, including Roopen Arya from KING'S COLLEGE HOSPITAL NHS FT and by the Quality and Outcomes Research Unit (QUoRU) based at University Hospitals Birmingham whose research, attached as supporting documentation, informed this proposaland drove the decision to focus on deaths rather than healthcare incidence of VTE. |

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| **Initial Indicator Title** | **The proportion of patients recovering to their previous levels of mobility / walking ability at i. 30 days and ii. 120 days** | IAS Ref Code: | IAP00369 |
| Indicator Set | CCG OIS |  |  |

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| Introduction |
| The 2 indicators measure the proportion of patients with a fracture resulting from a fall from a standing height or less that would not ordinarily cause fracture in a healthy young adult (a fragility fracture) recovering to their previous levels of mobility at (i) 30 days (ii) 120 days after admission to hospital.The 2 indicators proposed for inclusion in the CCG OIS are already part of the NHS Outcomes Framework (3.5.i and 3.5.ii). Although the calculation methodology is the same as for the already existing NHS Outcomes Framework indicators 3.5.i and 3.5.ii the inclusion in the CCG OIS means that the indicator values will be available at CCG level. The NHS Outcomes Framework indicators are currently published at national level (England) and broken down by age, gender and mobility category at admission. |

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| Indicator Details - Initial MRG Submission |  |
| Rationale / usefulness  | The Clinical Commissioning Group Outcomes Indicator Set (CCG OIS) is an integral part of NHS England’s systematic approach to quality improvement. It is intended to provide clear, comparative information for CCGs, patients and the public about the quality of health services commissioned by CCGs and the associated health outcomes. All of the CCG outcomes indicators have been chosen on the basis that they contribute to the overarching aims of the five domains in the NHS Outcomes Framework and it is intended as a tool for CCGs to drive local improvement and set priorities. Reference: CCG outcomes indicator set – NHS England;The rapid restoration of physical and self-care functions is critical to recovery from hip fracture, particularly where the goal is to return the patient to preoperative levels of function and residence. Loss of pre-fracture mobility and independence currently results in between a quarter and one third of such patients requiring a permanent change in residence. Early surgery, good perioperative care, supported multidisciplinary rehabilitation and falls risk intervention can reduce hospital stay, improve early return to function affecting both readmission rates and the levels of Social Care or NHS Continuing care-funded care support. Mortality following hip fracture is high (as a result of comorbidities).The indicators will form part of domain 3 of the CCG OIS. The Fragility Fractures Programme at DH was initiated in 2009, clinically led by NCD for Trauma Care, Prof Keith Willett, and the NCD for Older People, Prof David Oliver. The issues the programme sought to address were the care of hip fracture patients and the prevention of fractures amongst the high risk population. The programme looked for system architecture improvements that would improve the priority given across the NHS to those at risk of fragility fractures, and reduce the effect of delays, co-morbidities and lengthy stays in hospitals or care facilities. |
| Data source | National Hip Fracture Database (NHFD). |
| Construction  | ***Summary description of the calculation:***The indicator is aggregated by Clinical Commissioning Group (CCG) and will be a numerator / denominator construct, reported as a percentage.The indicators measure the proportion of patients recovering to a level of mobility at (i) 30 and (ii) 120 days, which is no more than 1 category lower than their mobility score prior to the fracture. There are five mobility categories within the NHFD. Patients within the NHFD have their mobility status categorised according to the algorithm outlined in the attached file (NHFD mobility categories.docx). The indicator only includes patients with a pre fracture mobility score in either category 1, 2 or 3. This is because any patient in either category 4 or 5 cannot fall more than 1 mobility category and therefore will always be determined to have recovered. ***Denominator:*** Count of all NHFD case records started in the designated 12 month period plus 30/120 days for their follow-up where:• The patient has survived to 30 / 120 days• There is a completed data field for pre fracture mobility and a 30/120 day mobility record***Numerator:*** The numerator will be the number of patients in the NHFD dataset that have survived to 30 / 120 days and have deteriorated in mobility as indicated by descending 2 or more mobility categories. This is to be reported as a percentage proportion of the number of patients surviving to 30 / 120 days after hip fracture for whom there is completion of appropriate data fields.The NHFD current dataset records walking ability indoors, walking ability outdoors and whether a patient is accompanied to walk outdoors at admission and at 30 and 120 days post-admission.For walking ability indoors the available options are:• Regularly walked without aids• Regularly walked with one aid• Regularly walked with two aids or frame• Wheelchair or bedboundFor walking ability outdoors the available options are:• Regularly walked without aids• Regularly walked with one aid• Regularly walked with two aids or frame• Electric buggy• Wheelchair or bedbound• Never goes outdoorsFor whether the patient is accompanied to walk outdoors the available options are:• No• Yes• Wheelchair or bedbound• Never goes outdoorsFor this outcome indicator patients with the above characteristics will be placed into five categories according to a simple algorithm for mobility. A summary of the category derivations from the above is provided in the attached file (as already mentioned above).***Statistical Methods / Risk adjustment variables:***The use of risk adjustment is not applicable as eligibility criteria are contained within the audit question (i.e. non applicable patients are excluded as part of the calculation).***Other (Quality assurance/interpretation/known limitations):***A high percentage is desirable to indicate that patients with a fragility fracture are receiving the best care possible for their condition.Despite the inclusion of “previous” levels of mobility in the title there is no expectation within the indicator that patients will get back to the exact same level of mobility. HSCIC had recommended the description “effective” recovery.The assumption is that more data will be submitted to NHFD. The risk is that walking ability at 120 days is timely and costly to collect.NHFD data quality issues are highlighted in the The National Hip Fracture DatabaseNational Report 2011 (p.33)<http://www.nhfd.co.uk/003/hipfracturer.nsf/NHFDNationalReport2011_Final.pdf> |
| Potential Issues | 1. **Low recording rates of mobility category**

When these indicators were previously discussed for inclusion in the NHS Outcomes Framework an issue was raised regarding low recording rates of mobility category at 30/120 days in the NHFD.For a record to be included in either the 30 day or the 120 day analysis there must be a record of mobility status at both, time of admission and at the 30/120 day point (after admission). A sample analysis was undertaken on 2012 data to determine the numbers involved. The results can be seen in table 1 below.Table 1: Number of total patients with valid CCG and valid mobility categories (1, 2 or 3) from NHFD 2012Table showing patients and mobility status from the NHFD 2012Although the majority of trusts complete the pre-injury mobility scoring at the time of the admission, the 30 and 120 day follow-up is generally done by phone or letter. It is self-reported and some hospitals do not undertake any follow-up. However, it is hoped that with the inclusion of these indicators in the CCG OIS CCGs will 'encourage' an increase in their follow-up reporting.It is proposed to highlight this issue in the Indicator Quality Statement. This is already being down for the NHS Outcomes indicators 3.5.i and 3.5.ii.1. **Possible selection bias**

It was previously recommended by MRG (as part of the discussions around the equivalent NHS OF indicators) to look at a possible selection bias. The question was asked whether the 15% (12% for 120 day outcome) of records eligible for inclusion in the indicator values were representative of the total number of patients in the NHFD. An analysis has been carried out on 2012 NHFD data to look at the distribution of total patients by age and gender and compare them to the distribution of patients with a valid mobility score at point of admission as well as the 30/120 day point.The table and chart below show the results:Table showing number of patients per age band and genderHistogram showing distribution of patients per age group and genderThe distribution of patients is similar for each of the male age groups. The proportion of females who are 90+ is higher overall than the number of eligible patients for the 2 indicator values (18% compared to 10% respectively).This can be highlighted in the indicator quality statement.1. **Small numbers when broken down by CCG**

After all filters have been applied to the original hip fracture data only 8,700 records or 15% of the total number of patient records (6,700 records for the 120 day analysis – 12% of total records) are included from which to calculate the overall indicator values from.When this is additionally broken down by CCG there is an issue with small numbers. As the calculation of the indicator does not involve a standardisation method this won’t be an issue for this.However, if we would apply the appropriate disclosure controls (where the numerator is <5) a large number of indicator values for CCGs would have to be disclosed.Please see table 2 below for further information.**Table 2**Table showing numbers of CCGS and data disclosed The table shows that 24% and 15% of CCGs for the 30-day and 120-day indicator respectively have no data. For another 30% (35% for the 120-day indicator) values would have to be suppressed.Therefore only around 50% of CCGs where the numerator is 5 or greater would have an indicator value published for 2012.A proposal could be to additionally aggregate up Local Area team. Alternatively, suppression could be applied where the numerator is less than 4, which would reduce the number of CCGs for which the indicator values would have to be suppressed from 54% to 46% for the 30-day indicator and from 50% to 45% for the 120-day indicator.  |
| Supporting Documents | <http://www.nhfd.co.uk/003/hipfracturer.nsf/NHFDNationalReport2011_Final.pdf>Please see attached excel file |

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| **Initial Indicator Title** | **Delayed Transfers of Care - Proportion of beds occupied by delayed transfer patients in provider organisations.** | IAS Ref Code: | IAP00353 |
| Indicator Set | - |  |  |

This indicator is being submitted by the NHS Trust Development Agency.

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| Introduction |
| Average adult bed days lost due to delayed transfers of care per month as a percentage of bed days within an organisation. The measure will be used to monitor the impact of delayed transfers on the bed stock within Acute, Mental Health and Community trusts.The Delayed transfer of care indicator proposed has the same numerator as the ASCOF delayed transfers indicator. The main difference between the two indicators is that this indicator will be used to show the direct impact of delays within an organisation's bed stock and will be used as an indicator to assist with monitoring overall throughput and systematic pressure within a trust.The main value of this indicator is that it will be trust specific, so will be more relevant for planning and monitoring purposes for a specific organisation. The denominator used will be from the KH03 and QNC, so measured against the trust's occupied bed stock. Therefore showing what effect delays had on an organisation's beds used during a reporting month.Information regarding delayed transfers of care is collected for non-acute (including community and mental health) as well as acute patients. The focus of this return is to identify patients who are in the wrong care setting for their current level of need and includes patients in all NHS settings irrespective of who is responsible for the delay.This indicator applies to both acute and non-acute (including community and mental health) patients. Even though reimbursement only applies to patients receiving acute care; the data collected in this measure will include all delays that occur. This is irrespective of whether the delay is reimbursable and which organisation is responsible for the delay.There has been no definitive indicator definition currently which has meant trusts have been interpreting delayed transfer calculations on their own assumptions. This has led to differing DToC rates being published or used to make decisions on by organisations. |

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| Indicator Details - Initial MRG Submission |
| Date of Initial Discussion:  |

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| Rationale / usefulness  | The indicator will be used to assess levels of delayed transfers of care attributed to social and NHS reasons and will be used for planning and bed stock monitoring. In partnership with other indicators such as A&E 4 hour waits, ambulance handovers and bed occupancy rates, the delayed transfer indicator can be used to measure the system wide pressure that a trust may be experiencing; this would be particularly relevant in the winter period.It is increasingly evident that effective hospital discharges can only be achieved when there is good joint working between the NHS, local authorities, housing organisations, primary care and the independent and voluntary sectors in the commissioning and delivery of services including a clear understanding of respective services. To ensure that patients discharge arrangements are working and monitored effectively within an organisation, a consistent nationally recognised measure needs to be used. The ability to monitor the bed stock within organisations and loss of beds due to delays must be measured using one consistent method in order for trusts to reliably identify how much of an issue delayed transfers of care are.With the strain on the hospital system - especially evident during winter months, it is important to understand and evidence the reasons for this. As A&E type 1 performance constantly remains below 95% (as well as all types dropping below the national standard occasionally), ambulance handovers greater than 30 minutes increase and cancelled operations remain a endemic problem - it is a necessity to monitor the reasons for slow throughput within trusts in England. The evidence on a patient benefit basis for earlier discharges are: "Studies show increases in patient satisfaction, reductions in hospital lengths of stay, increases in the number of patients still at home 6 months after discharge, greater community reintegration, improvements in health-related quality of life, and reductions in costs per patient." according to a research review carried out tackling delayed discharges.Delayed transfers of care are an evident problem according to the unvalidated data on the daily sitreps is that of delayed transfers - which at a TDA level is 3.3% (around 6,500 beds days lost a week) of the total bed occupancy so far this winter. At individual trust level, a number of trusts have been losing over 10% of their weekly bed stock to delays. This can put a lot of pressure on bed availability and will lead to systematic hospital disruption.According to the NHS confederation, there is an evident delayed transfers problem: "There are large numbers of people who are experiencing delays in being transferred to the right sort of care. This has both a financial and a human cost. Delayed transfers in care currently cost the NHS £545,000 per day (approximately £200 million per year). They are distressing for patients and, without action, the situation will get worse."This would indicate that the problem is not just a winter issue, but needs all year round monitoring with validated data, to ensure that decisions and planning can be made within and for a trust with certainty on the reliability of the measure. The measure needs to be monitored at trust level, if trusts are going to be able to identify how much of a problem this is within their trust and how they are to plan and monitor a reduction in delays. |
| Data source | ***Numerator:***MSITDT - UNIFY2***Denominator:***UNIFY2 - KH03 quarterly report (A131 Occupied sum - beds in wards open overnight) 999 (all beds)UNIFY2 - QNC quarterly report (QNCB QNC OCC)  |
| Construction | ***Summary description of the calculation:***Average adult bed days lost due to delayed transfers of care per month as a percentage of bed days within an organisation***Calculation type:*** Percentage***Denominator:***The average number of occupied beds within a trust. Calculated by dividing the total number of occupied beds (consultant led and non-consultant led) during the past year by the number of days in the year. The total number of bed days is the sum of bed days is from the KH03 (consultant-led occupied bed days) and QNC (non-consultant-led occupied bed days) extractions.To calculate the denominator:From UNIFY2 extracts: KH03\_v2 - Bed Availability and Occupancy - Q1 2010-11 onwards and QNCBeds - Public Using fields: Occupied Beds in wards open overnight from KH03 and Qncb Qnc Occ from the QNC - use the most recent 4 quarters bed data to create a total beds occupied figure for the trust for the past year. This figure is then divided by the number of days in the year to give an average daily bed occupancy.KH03 Occupied bed days + QNC occupied bed days = total occupied bed days for quarter.Monthly occupied beds denominator = (Total occupied bed days previous 4 quarters/ Number of days in the previous 4 quarters) \* number of days in reporting month.***Numerator:***Calculating the Numerator = Average bed days lost due to NHS, Social and Both delayed transfers of care. Beds lost is derived by using UNIFY2 extraction Monthly SITREPs Delayed Transfers of Care (DTOC) Extracts - All trusts public data:Monthly bed delays lost per day = (NHS B Sum 1 + Social Care B Sum 1 + Both B Sum 1) / number of days in the monthNHS B Sum 1 - Beds lost due to NHS responsibilitySocial Care B SUM 1 - Beds lost due to Social Care responsibilityBoth B SUM 1 - Beds lost due to combined NHS and Social Care responsibilityThe average of the number of beds lost is: beds divided by the number of days in the reporting month.A delayed transfer of care from acute or non-acute (including community and mental health) care occurs when a patient is ready to depart from such care and is still occupying a bed. A patient is ready for transfer when:a. A clinical decision has been made that patient is ready for transfer ANDb. A multi-disciplinary team decision has been made that patient is ready for transfer ANDc. The patient is safe to discharge/transfer.A multi-disciplinary team in this context includes nursing and other health and social care professionals, caring for that patient in an acute setting. For patients of no fixed abode, the council responsible for the patient is the council whose area they reside. This is irrespective of whether the patient lives on the street or in a hostel. Asylum seekers and others from overseas should be listed under the council in which they currently reside. It is the responsibility of this council to decide whether they are eligible for social services.The numbers of delays are worked out from any patient classified as a delayed patient that is in a bed for any part of the day of reporting. Therefore, if they were deemed ready to discharge at 2300hrs, this would be included in the number of delayed beds for that dayTaken from the DH DToC guidance (attached):“Monthly Total of all delayed days -This should include the delayed days for all patients delayed in the month, including patients not present at the time of the monthly snapshot. The monthly SITREP reporting period is a calendar month. The reporting period covers from 00.01 on the 1st calendar day of the month to 24.00 on the last calendar day of the month. A total count between these times should be reported for the following items:(b) Number of days delayed within the month for ALL patients delayed throughout the month”***Statistical Methods / Risk adjustment variables:***N/A***Other (Quality assurance/interpretation/known limitations):***This indicator is to be used primarily for national and local provider monitoring of delayed transfers against a nationally agreed ceiling of 3.5% of bed occupancy lost to delays for acute organisations and 7.5% of bed occupancy for Mental Health and Community organisations. The trusts are to be RAG rated against these standards as part of an indicator produced to monitor the current bed state lost to delayed transfers. This information is also to be used by regional delivery and development to monitor levels of delays of organisations within their area and trusts they are responsible for. The measure methodology would also be disseminated to trusts within the Trust Development Authority to ensure that a consistent approach is taken to the reporting and monitoring of delayed transfers of care. At present there is no clear guidance to the measurement of delays, resulting in differing interpretations of the effect of delays on a trust's bed state.Standard ceiling set at 3.5% occupied by delayed patients for acute trusts and 7.5% for community and mental health trusts. Mental health and community health trusts have the ceiling set higher due to the slower throughput within these trusts and the specialist nature of the services delivered. Patients with complex conditions needing to move between providers are, in general, more difficult to transfer due to the lack of suitability and availability of accepting organisation beds.The specific use of the delayed transfer of care indicator can be used to monitor the impact of delays within a specific organisation. It can be used to indicate reasons for low levels of bed availability and is considered alongside other indicators, typically A&E 4 hour wait, to give a view on performance mainly during the winter period. It is also used for planning purposes. It is possible to compare similar providers’ delays and try to establish best practice within organisations. This measure will also give a historical progress of performance through time, allowing monitoring to identify trends and what processes can affect delays within a system.Delayed Transfers also collected on the NTDA daily A&E collection and UNIFY2 Winter Sitrep on a daily - unvalidated basis. Data submission is submitted once as pre-published data to UNIFY2 - Department of Health data collection tool. Data is then subject to validation by the DH and submitted a second time for the public domain. Monthly extraction of the numerator is available 20 working days after the reporting month end. |
| Potential Issues | The numerator is based on the average beds lost in a month and the denominator on an annual basis of the average. This is due to the KH03 and QNC not being available until a month after the end of the reporting quarter, therefore the bed data would be out of season. Winter is very influential on bed occupancy, so unless the month discharges are used with the aligned quarter's beds this would definitely impact upon the delayed discharges percentage figure.For example - Q4 bed data (KH03 and QNC) - January/ February/ March for the delayed transfers during May/ June/ July, which would be the months that the latest bed data (MSITDT) was available for. Using the previous year's quarter would be deemed as too out of date.Therefore using an average of the previous year daily bed data was seen as the most relevant/ reliable, as this would ensure that no seasonal factors distort the average beds occupied. |
| Supporting Documents | <http://www.scotland.gov.uk/Publications/2004/10/20042/44597>[www.nhsconfed.org/publications/documents/papering-over-cracks.pdf](http://www.nhsconfed.org/publications/documents/papering-over-cracks.pdf)<http://www.england.nhs.uk/statistics/statistical-work-areas/delayed-transfers-of-care/annex-3-annual-report-2012-13-1.pdf>[http://webarchive.nationalarchives.gov.uk/+/www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH\_4003252](http://webarchive.nationalarchives.gov.uk/%2B/www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_4003252)<http://bmb.oxfordjournals.org/content/95/1/33.full> |
| Additional Information / Sample Data : | Please see the attached example report |

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| **IAS Ref Code** | **IAP00368** |
| **Indicator Title** | **Delayed Transfers of Care - Proportion of beds occupied by delayed transfer patients in provider organisations.** |
| **Indicator Set** | **Patient Reported Outcome Measures (PROMs)** |

|  |  |  |  |
| --- | --- | --- | --- |
| Version | Date | Changed By | Summary of changes |
| v.01 | 29/11/13 | Gomersall, Lydia | Document Created |
|  | 07/01/14 | Lydia Gomersall | MRG paperwork prepared |
|  | 17/02/14 | Lydia Gomersall | MRG comments added |
|  | 17/02/14 | Lydia Gomersall | IGB paperwork prepared |
| v.02 | 02/06/17 | Andrew Besch | Updated to reflect decision of IGB meeting on 22/07/2014 |

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# Assurance Summary

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| --- | --- |
| **IAS Ref Code** | IAP00368 |
| **Indicator Title** | Delayed Transfers of Care - Proportion of beds occupied by delayed transfer patients in provider organisations. |
| **Indicator Set** | Patient Reported Outcome Measures (PROMs) |

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| Assurance Stage |  | Date(s) | Comments |
| Application Received |[x]  29/11/13 |  |
| Initial Appraisal Completed |[x]  02/12/13 |  |
| Peer Review Appraisal |[x]  07/01/2014 |  |
| Methodology Review Group Discussion |[x]  09/01/2014, 06/02/2014 |  |
| Indicator Governance Board Discussion |[x]  11/03/2014 |  |
| Signed-off |[ ]   |  |

Peer Review

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| --- | --- | --- | --- |
| Peer Reviewer(s) / Organisations : |  |  |  |
| *Outcome of Peer Review consideration:* | 1. **Proposal signed off, with or without caveats**
 |[ ]   |
|  | 1. **Minor changes recommended**
 |[ ]   |
|  | 1. **Declined to sign-off**
 |[ ]   |

Methodology Review Group (MRG)

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| *Outcome of MRG consideration:* | 1. **No significant issues identified**
 |[ ]   |
|  | 1. **No significant issues on basis of completion of outstanding actions**
 |[ ]   |
|  | 1. **Some concerns expressed as caveats or limitations**
 |[ ]   |
|  | 1. **Significant reservations**
 |[ ]   |
|  | 1. **Unresolved issues**
 |[ ]   |

Indicator Governance Board (IGB)

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| *Final Appraisal Status* | 1. **Assured**
 |[ ]   |
|  | 1. **Assured with Comments**
 |[x]   |
|  | 1. **Failed Assurance**
 |[ ]   |

# Peer Review Summary

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| **Indicator Title** | **Delayed Transfers of Care - Proportion of beds occupied by delayed transfer patients in provider organisations.** | IAS Ref Code: | IAP00368 |
| Indicator Set | Patient Reported Outcome Measures (PROMs) |  |  |

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| Date of Peer Review | 07/01/2014 |
| Peer Reviewer(s) / Organisations : | Advice was sought from the Classifications Team |
| Peer Review Comments: | See attached PDF provided by the Classifications Team.**Key issue raised:**As discussed…, the concept of ‘venous thromboembolism (VTE)’ does not exist within the ICD-10 Classification and the Senior Classifications Team has confirmed that it is not possible for us to provide a definitive list of all codes classified within ICD-10 that could be considered ‘venous thromboembolism’. |

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| *Outcome of MRG consideration:* | 1. **Proposal signed off, with or without caveats**
 |[ ]   |
|  | 1. **Minor changes recommended**
 |[ ]   |
|  | 1. **Declined to sign-off**
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| Link to Peer Review Appraisal |  |

# Methodology Review Group - Application for Consideration

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| **Initial Indicator Title** | **Delayed Transfers of Care - Proportion of beds occupied by delayed transfer patients in provider organisations.** | IAS Ref Code: | IAP00368 |
| Indicator Set | Patient Reported Outcome Measures (PROMs) |  |  |

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| Introduction |
| National mortality rate from venous thromboembolism (VTE) that occurred 90 days post discharge from hospital, per 100,000 adult admissions.Such deaths are those where VTE is specified on the Medical Certificate of Cause of Death (MCCD) as being one of the conditions leading to, or directly causing death (Part 1, sub-sections a-c).There is currently no other indicator that measures the outcomes for patients in hospital who subsequently die from a VTE. This new patient safety measure considers a crucial outcome, death, and should drive efforts to improve the prevention, detection and treatment of VTE before it causes death. |

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| Indicator Details - Initial MRG Submission |
| Date of Initial Discussion:  |

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| Rationale / usefulness  | This new national indicator is a further step in the development of a set of robust patient safety outcome measures to monitor care in hospital. The main improvement action is to drive down the number of deaths from VTE, it is expected that risk assessment will increase and VTE coding will improve.Prevention of VTE associated with hospitalisation is a key patient safety priority for hospitals. This supersedes a previous definition for a VTE indicator on the ‘incidence of healthcare-related VTE’. This is because distinguishing between healthcare and community-related VTE proved unreliable in the originally intended data source – Hospital Episode Statistics (HES). Measuring death as an outcome, by linking HES with ONS Mortality data, should also drive efforts to improve the prevention, detection and treatment of VTE before it causes death.In addition to the main indicator, ‘deaths from VTE’, the following ‘contextual indicators’ are suggested to sit alongside this to provide further detail as follows – 1. The number of diagnoses/history of VTE recorded for hospital episodes (in any position, not just primary), 2. The number of people who had a VTE diagnosed or history and who died from a VTE or VTE related condition within 90 days of discharge3. The total number of people that died from a VTE or related condition where there was no record of VTE or history of VTE within 90 days of discharge (if 2 and 3 are added together, it will give the number of people in total who died from a VTE within 90 days of discharge)The time period of 90 days post discharge date has been chosen, as opposed to 30 or 60 days, as there is evidence to suggest that VTE after surgery is substantially increased in the first 12 postoperative weeks (see Million Women study and more recently the QUORU study –attached).National reporting of figures initially will be a huge step towards more detailed reporting and further breakdown in time as methods of standardisation are developed and quality of data improves. The main improvement action is to drive down the number of deaths from VTE, in addition, it is expected that risk assessment for VTE will increase and VTE coding will improve.There is a comprehensive national VTE prevention programme that has a direct bearing on this indicator. The programme encompasses risk assessment with a unified national tool, mandatory reporting of risk assessment rates with financial performance management and national guidance on VTE prevention. Currently, 95% of adult inpatient admissions are risk assessed for VTE. This indicator should increase this percentage up to 100%. For those deemed at increased risk of VTE they should be given appropriate prophylactic treatment according to NICE clinical guideline CG92. The prevention of VTE should in turn reduce the number of deaths from VTE, whether they were diagnosed in a previous hospital episode or not. This indicator takes account of any previous hospital episode – whether or not a VTE was diagnosed – where the patient subsequently died of a VTE. |
| Data source | ***Denominator***: Hospital Episode Statistics (HES)***Numerator***: Hospital Episode Statistics (HES) – HSCIC linked to Mortality Data by cause - ONS, from 2007/08. |
| Construction  | ***Summary description of the calculation:***The number of adults who were admitted to hospital for any reason (NOT just episodes where VTE had been diagnosed) who subsequently died up to 90 days post discharge according to the Medical Certificate of Cause of Death (MCCD) where VTE was one of the conditions leading to, or directly causing death (part 1, sub-sections a to c) per 100,000 adult hospital admissions (from HES).This indicator is a national figure and looks at adults only (from 19 years onwards).***Calculation type:*** Crude rate***Denominator:***All adult hospital admissions (excluding regular day or night attenders) as captured in HES for the respective financial years.***Numerator:***Annual figure (financial year) of the number of deaths 90 days post discharge from hospital where the cause of death is VTE or VTE related – derived from HES data on adult inpatient admissions (for any reason) and ONS mortality data (from death certificates).A VTE death is defined as one in which a death meets two criteria:1) one of the listed VTE ICD-10 codes (as per previous evidence, submitted alongside this application) appear anywhere in Part 1 of the Medical Certificate Cause of Death (MCCD); and2) is associated with a hospital episode with any diagnosis (attached as supporting documentation).List of ICD-10 codes for diagnosis of VTE:These are the codes agreed by 'experts', including the CMO's Expert Working Group historically. These codes are utilised in relevant peer-reviewed publications as per the attachments to this application.I260 Pulmonary embolism with mention of acute corpulmonaleI269 Pulmonary embolism without mention of acute corpulmonaleI800 Phlebitis/thrombophlebitis superficial vessels of lower extremitiesI801 Phlebitis and thrombophlebitis of femoral veinI802 Phlebitis/thrombophlebitis of other deep vessels of lower extremitiesI803 Phlebitis and thrombophlebitis of lower extremities, unspecifiedI808 Phlebitis and thrombophlebitis of other sitesI809 Phlebitis and thrombophlebitis of unspecified siteI821 Thrombophlebitis migransI822 Embolism and thrombosis of vena cava1823 Embolism and thrombosis of renal vein1828 Embolism and thrombosis of other specified veins1829 Embolism and thrombosis of unspecified veinO222 superficial thrombophlebitis in pregnancy –O223 Deep phlebothrombosis in pregnancyO229 Venous complication in pregnancy, unspecifiedO871 Deep phlebothrombosis in the puerperiumO87.0 Superficial thrombophlebitis in the puerperiumO87.9 Venous complication in the puerperium, unspecifiedO88.2 Obstetric blood-clot embolism – covers obstetric/puerperal (pulmonary) embolism NOS***Statistical Methods / Risk adjustment variables:***Initially a national presentation of data is required and therefore standardisation has not been considered. This is a first step in the process. Over time, as standardisation methods are develop, we would look to present further breakdowns of the figures and employ standardisation techniques to control for age and gender as there are well established associations between VTE and age and VTE and gender. ***Other (Quality assurance/interpretation/known limitations):***More information about the HES-ONS linked dataset, including the methodology used for linkage is available at <http://www.hscic.gov.uk/article/2677/Linked-HES-ONS-mortality-data>. The indicator forms part of the NHS Outcomes Framework which will be used to hold NHS England to account for delivering improved outcomes for patients in the NHS.A low number of deaths is desirable. |
| Potential Issues | VTE is difficult to diagnose, even after death, and interpretation is difficult, so it is hoped that this indicator will improve diagnosis rates.This is the only indicator on VTE within the NHS. The quality of data is poor but this is an attempt to get the ball rolling towards better data quality and further data breakdowns.There is a risk of gaming by some providers in terms of them not coding episodes as VTE but something else, so their numbers appear lower.There is known under-recording of the incidence of VTE in HES. Stein et al reported an incidence of pulmonary embolism (PE) and deep vein thrombosis (DVT) alone at 1.7% of admissions – equivalent to around 253,000 admissions annual if extrapolated. Evidence presented to the Health Select Committee included estimates of around 10-30% of Medical and General Surgery cases result in DVT (House of Commons Health Committee, 2005). Extrapolating again from HES data on admissions for those estimates alone, suggests between around 360,000 to 1.1m potential cases. The VTE risk assessment programme should increase VTE coding in hospital records.There is a likelihood of under-reporting of VTE as the cause of death on death certificates. Patients in the two databases are matched using the unique identifier, HESID, and merged into one mortality master file to ensure one record per patient. Almost 95% of deaths show the same data in HES and ONS based on the linked HES-ONS mortality data.HES data are used for the denominator of this indicator. The HSCIC publish a quality report on this data at: <http://www.hscic.gov.uk/catalogue/PUB12566/hosp-epis-stat-admi-dq-note-2012-13-rep.pdf> |
| Supporting Documents | i. NICE Clinical Guideline CG92 <http://www.nice.org.uk/nicemedia/live/12695/47195/47195.pdf>ii. CHEST article - <http://www.ncbi.nlm.nih.gov/pubmed/23681495>iii. Clinical coding for venous thromboembolism – A report on the findings of a review of clinical coding for VTE undertaken at Taunton & Somerset NHS FT (electronic copy attached to application)iv. HEART article - <http://heart.bmj.com/content/early/2013/09/13/heartjnl-2013-304479.abstract>v. Incidence of and mortality from venous thromboembolism in a real-world population: The Q-VTE Study Cohort, The American Journal of Medicine. vi. Duration and magnitude of the postoperative risk of venous thromboembolism in middle aged women: prospective cohort study, Sweetland et al, BMJ, 2009. |
| Additional Information / Sample Data : | Clinical advice has been provided by members of the VTE Programme Board, which is responsible for the National VTE Prevention Programme, including Roopen Ayra from KING'S COLLEGE HOSPITAL NHS FT and by the Quality and Outcomes Research Unit (QUoRU) based at University Hospitals Birmingham whose research, attached as supporting documentation, informed this proposal and drove the decision to focus on deaths rather than healthcare incidence of VTE. |

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# MRG Recommendations, Comments & Updates:

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| **Indicator Title** | **Delayed Transfers of Care - Proportion of beds occupied by delayed transfer patients in provider organisations.** | IAS Ref Code: | IAP00368 |
| Indicator Set | Patient Reported Outcome Measures (PROMs) |  |  |

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| Summary of discussion – 9th January 2014 |
| Sam Alderson (NHS England) introduced the indicator “Deaths from venous thromboembolism (VTE) related events 90 days post discharge from hospital” which measures the number of adults who were admitted to hospital for any reason (NOT just episodes where VTE had been diagnosed) who subsequently died up to 90 days post discharge according to the Medical Certificate of Cause of Death (MCCD) where VTE was one of the conditions leading to, or directly causing death (part 1, sub-sections a to c). This is expressed per 100,000 adult hospital admissions (from HES). This indicator is being assured for use as a national figure and looks at adults (aged 19 or over) only. There is currently no other indicator that measures the outcomes for patients in hospital who subsequently die from a VTE. This new patient safety measure considers a crucial outcome, death, and should drive efforts to improve the prevention, detection and treatment of VTE before it causes death. The meeting was joined by Roopen Arya and Helen Morrison from the National VTE Prevention Programme and Francis Healy from the NHS England Patient Safety policy team.* Sam Alderson clarified that the indicator measures post discharge and not post admission as indicated in some of the supporting paperwork.
* Jonathan Hope noted that a similar indicator had been rejected during a (separate) development process in the past and queried how much things had moved on. He cited that it was rejected on the basis that VTE is only diagnosed in 25% of cases, and that the issue was around the ability to diagnose VTE (rather than HES coding issues), and queried how this indicator handled this issue.
* In response, Francis Healy put to the group that if something is “recorded nowhere and known to no one” then there will not be an indicator of it, so that debate has continued. There is an acceptance of the limitation of HES data, which will not be relied upon. Instead the indicator relies on VTE being a cause of death using the coding from the death certification associated with a discharge from hospital. The indicator proposed is, after debate, considered the best available option.
* Jonathan Hope asked that given the limitations, what does the indicator indicate?
* In response Francis Healy put forward her belief that by focusing on cause of death there is enough information to support an informative clinical patient safety message. In addition MRG was informed that previous quoted figures around VTE deaths per year of 25,000 (quoted at select committee around 4 years ago) were found to be without foundation. Therefore the idea that the 6,000 deaths in ONS should really be around 25,000 is based on a misunderstanding, and countered the argument that ONS has so much information missing it should not be used. The 6,000 is deaths directly related to VTE. VTE related deaths would be more (historical figures suggest around 17,000).
* Paul Iggulden queried how the indicator defined helps address the two statements in the rationale “looking for a set of robust patient safety outcome measures to monitor care in hospitals”, and “prevention of VTE associated with hospitalisation as a key safety priority”.
* Francis Healy responded there is a logic in that if someone is admitted for any condition and then the hospital fails to get the prophylaxis right then the patient could develop VTE either in hospital or within the 90 days afterwards which is the link to hospitalisation and VTE
* Other safety opportunities are when the ideal opportunity to prevent them all together are missed, then it should be detected early before it kills. Broadly speaking it will only be an undetected and untreated DVT that cause the fatal pulmonary embolism. That is why there is a link and trajectory between a hospital episode and death because to reach that far not only has failed in prevention and the detection and early treatment that mean the patient did have a VTE but did not die.
* Roopen Arya suggested that having a VTE indicator in the NHS Outcomes Framework would be a great opportunity to move to the next step in the prevention programme which is to link the risk assessment to the appropriate prophylaxis and improving the outcomes.
* Chris Dew asked whether action could be taken on one national level number.
* Francis Healy replied that a national number is useful as the VTE prevention programme has been a national programme and everyone has more or less changed practice at the same time so it wasn’t necessary to break it down to hospital level for it to be useful.
* Alyson Whitmarsh highlighted that not all occurrences of VTE that we are talking about are acquired in hospital, so the indicator must be covering prevention and detection.
* Jonathan Hope put forward that it would be interesting to see whether there has been a change in those patients who haven’t been admitted in the previous 90 days, The argument here is that if the patient has been in hospital 90 days before the VTE death then there has been an opportunity lost. So if there has been a reduction in the other part it might not support the argument.
* Paul Fryers suggested there was perhaps an opportunity missed to look at those not in hospital, as maybe they should have been in hospital, for instance someone who has been to their GP with a pain in the back of their knee to which the GP identifies it as a sports injury and tells them to go home where they subsequently die – this would be failure of the system.
* Paul Fryers sought clarification that the description in the numerator “associate with a hospital episode with any diagnosis” actually meant any hospital episode (e.g. pregnancy might not be classed as a diagnosis but was an important group).
* Andy Sutherland put forward his concern that because of the data quality issues, whether the indicator was a proper representation of what the developer thinks it is. In addition it was suggested that if there was a category of developmental indicator then MRG would have felt more comfortable with the proposal, but were less happy to define it as assured when there are significant concerns around the completeness of the data.
* Andy Sutherland suggested that the indicator should actually describe Deaths from recorded VTE.
* Francis Healy responded that there was some evidence from smaller scale studies (which can be produced) that death certification is pretty complete in terms of completion of part 1 sub section a-c, which is why data from the “lower down” sections of the death certificate haven’t been included where it maybe more incomplete.

The meeting drew to a close without finalising discussion on the indicator. It was suggested that the indicator be brought back at the next meeting to continue the appraisal. In order to aid the discussion it was suggested that MRG members provide any questions they had intended to ask during the meeting to secretariat, who would then forward these to the applicant.Chris Dew had asked at the end of the meeting as to how the choice of ICD10 codes had been developed and determinedAdditional questions / comments are as follows:* Was any consideration given to ‘casemix’ as I assume there is a difference between a death in a seriously ill cancer patient who may well die from other aspects of their condition anyway, and someone who has a relatively simple operation and develops a VTE as a result;
* Are day cases included? [I noted that in the Lester paper they gave different results].
* That I think it would be better to consider calling it ‘Deaths from recorded VTE…’ as we (clearly) can’t say anything about unrecorded VTE.
* Regarding Standardisation – if the indicator is being looked at over time, would like to see breakdown by age (from a future proofing perspective)
* How does the indicator proposed take us closer to the stated rationale than a straight forward mortality from VTE?
* As it stands a range of data quality and coding concerns, along with interpretation concerns (is the death 90 days post discharge the result of an unknown VTE pre hospital stay n or a reflection of poor care whilst in hospital is key and as I understand it separating these out not possible) make this questionable as a national indicator. If this were to appear in NHS OF as a single year, then we would want to compare the figure – over time, and disaggregated to CCG level. Both of these raise significant concerns regarding standardisation (as the application notes) and limit the value of the proposed measure as it stands.
* Regarding the use of population est. as the denominator. I wasn't clear and wasn't entirely convinced the population at risk was all, not just those who had an admission.
* “The main improvement action is to drive down the number of deaths from VTE” - Would a rate of death per head not do this just as well?
* “it is expected that risk assessment will increase” - There is a specific process indicator that looks at this and is more appropriate
* “ and VTE coding will improve” - Evidence presented does not support that there is an issue with coding completeness, would this statement be better worded as VTE diagnosis rates in the living will improve? Is it possible to improve VTE diagnosis rates in the living? I understood there are clinical barriers to achieving this.
* There seems to be an assumption that a patient dying 90 days from discharge is a lost opportunity, what if prophylaxis was not appropriate at discharge (e.g. haemorrhagic stroke)? What if DVT or risk of was not present at discharge? Has the impact of these 2 areas been assessed?
* The evidence base of 90 days post discharge from the QuORU study there was no significant benefit of VTE assessment for day cases this isn’t reflected in the numerator.
* The various mentions of under-recording of incidence should be changed to under-diagnosis of incidence in my opinion.
* It isn’t appropriate to deviate from National Clinical Advice on coding when looking at HES data, this is due to the training coders receive follows this advice – so all things being correct, coders will interpret clinical notes to specific codes based on National Clinical Advice rather than clinical knowledge. This will affect the contextual indicators as alternative coding advice has been sought – contextual indicators may over report VTE, national advice is likely to under report but be robust in those it does report.
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| Ref codeIAP00368-01Made: 09/01/14 | **The applicant is to further consider the list of questions raised subsequent to the MRG meeting.** |
| Update: Made: 03/02/2014 | **See below** |

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| --- | --- | --- |
| Rec Status: | **Further Information Required**  |[ ]  **Resolved / No Action Required** |[ ]

# MRG recommendations (9th January 2014) and responses:

1. **Was any consideration given to ‘casemix’ as I assume there is a difference between a death in a seriously ill cancer patient who may well die from other aspects of their condition anyway, and someone who has a relatively simple operation and develops a VTE as a result;**

Yes, the indicator will include VTE in any position on the death certificate and as long as coding is consistent it will be meaningful. We know there will be medical and surgical cases but no overall impact is expected on outcomes. We agree that even when equally effective prevention and treatment of VTE is given some patients are more likely to die from VTE than others. But we do not believe this is a problem for this indicator, as it is an outcome framework measure and so will not be used to compare commissioning populations/providers with different casemix, simply to monitor improvement from national (and later local) baselines. It is conceivable that increasing rates of serious comorbidities would create a small natural tendency for this indicator to rise over time if there were no improvement in prevention and treatment of VTE, but as the research evidence presented to the group indicates the scope for reductions in VTE deaths after discharge from hospital through improvement in prevention and treatment is substantial, we are confident it can be used to demonstrate improvement from baseline without casemix adjustment.

1. **Are day cases included? [I noted that in the Lester paper they gave different results].**

Yes, day cases are still classed as an admission and risk assessed, these are large in number now and too complex to exclude. In addition, the borderline between what cases are treated as day cases and inpatients varies between hospitals and the proportion of day cases constantly increases. Including both therefore future-proofs the indicator.

1. **That I think it would be better to consider calling it ‘Deaths from recorded VTE…’ as we (clearly) can’t say anything about unrecorded VTE.**

Okay, the indicator will be 'Deaths from recorded VTE within 90 days of discharge from hospital'. Whilst we are content with this we would ask the group to confirm that referring to recorded deaths rather than deaths is consistent with other indicators that rely on death certification.

1. **Regarding Standardisation – if the indicator is being looked at over time, would like to see breakdown by age (from a future proofing perspective)**

We are requesting data from HSCIC to allow us to consider standardisation, which we agree would future-proof the indicator. However, as the research evidence presented to the group indicates the scope for reductions in VTE deaths after discharge from hospital through improvement in prevention and treatment is substantial, we are confident the indicator can be used to demonstrate improvement from baseline even without age adjustment.

1. **How does the indicator proposed take us closer to the stated rationale than a straight forward mortality from VTE?**

The indicator has been defined in this way to ensure it is measuring a key patient safety outcome, and not just a effectiveness point. If the indicator was intended as an indicator of effectiveness of healthcare, straightforward mortality would be appropriate. The indicator has been defined in this way to ensure it is measuring a key aspect of patient safety for the safety domain of the outcomes framework. Linking deaths from VTE to a recent hospitalisation increases the proportion of deaths in the indicator where an omission of prophylaxis or errors in diagnosis or treatment are likely to contribute to the outcome, and ensures exclusion of patients who had no recent contact with hospital services and where therefore no clear opportunity to protect their safety would have existed.

1. **As it stands a range of data quality and coding concerns, along with interpretation concerns (is the death 90 days post discharge the result of an unknown VTE pre-hospital visit or a reflection of poor care whilst in hospital is key and as I understand it separating these out not possible) make this questionable as a national indicator. If this were to appear in NHS OF as a single year, then we would want to compare the figure – over time, and disaggregate to CCG level. Both of these raise significant concerns regarding standardisation (as the application notes) and limit the value of the proposed measure as it stands.**

The indicator does not rely on the quality of HES data coding (all hospital admissions are included). It does rely on the quality of death certification data. We are unsure if the indicator group believes death certification data is generally too unreliable for indicator use (we assume not) or believes there are particular issues with VTE recording on death certificates. If the latter, we think there may be a misunderstanding. There has in the past been speculation that VTE death certification was seriously inaccurate, as a much higher figure of 25,000 VTE deaths annually in the UK was repeatedly cited. The source of this figure was inaccurate evidence from an industry representative to a parliamentary select committee; the actual research literature suggests that the deaths recorded in the UK are at the level expected from international studies. A possible additional source of misunderstanding is incidental findings of VTE as post-mortem (especially where patients have been immobile in their last days of life); these may be missed in patients not subject to post-mortem, but as these were not a cause of death would not have an effect on the data quality for this indicator which is drawn from part 1 of death certification. See notes above on standardisation by comorbidities or age. Comparison over time is the only purpose of the indicator, and we would be content for it to be approved as a national-level indicator, with disaggregation to CCG subject to a further application

1. **Regarding the use of population est. as the denominator. I wasn't clear and wasn't entirely convinced the population at risk was all, not just those who had an admission.**

The denominator is all adult hospital admissions.

1. **“The main improvement action is to drive down the number of deaths from VTE” - Would a rate of death per head not do this just as well?**

See response to point 5 above.

1. **“it is expected that risk assessment will increase” - There is a specific process indicator that looks at this and is more appropriate**

We will remove this statement.

1. **“ and VTE coding will improve” - Evidence presented does not support that there is an issue with coding completeness, would this statement be better worded as VTE diagnosis rates in the living will improve? Is it possible to improve VTE diagnosis rates in the living? I understood there are clinical barriers to achieving this.**

We will remove this statement.  The indicator relies only on coding of death certification. See point 6.

1. **There seems to be an assumption that a patient dying 90 days from discharge is a lost opportunity, what if prophylaxis was not appropriate at discharge (e.g. haemorrhagic stroke)? What if DVT or risk of was not present at discharge? Have the impact of these 2 areas been assessed?**

Yes, this has been considered - based on the Million Women Study we have a handle on inappropriate prophylaxis and measure it through the Safety Thermometer. We appreciate that not every patient should receive prophylaxis and that not every death from VTE is preventable. The indicator addresses an outcome where there is good evidence that safer care can improve outcomes; we do not believe indicator criteria requires a condition to be entirely preventable.

1. **The evidence base of 90 days post discharge from the QuORU study there was no significant benefit of VTE assessment for day cases this isn’t reflected in the numerator.**

We have included day cases in the indicator as per the earlier point, it would be too difficult to exclude this large number of cases. The borderline between what cases are treated as day cases and inpatients varies between hospitals and the proportion of day cases constantly increases. Including both therefore future-proofs the indicator.

1. **The various mentions of under-recording of incidence should be changed to under-diagnosis of incidence in my opinion.**

This will be changed.

1. **It isn’t appropriate to deviate from National Clinical Advice on coding when looking at HES data, this is due to the training coders receive follows this advice – so all things being correct, coders will interpret clinical notes to specific codes based on National Clinical Advice rather than clinical knowledge. This will affect the contextual indicators as alternative coding advice has been sought – contextual indicators may over report VTE, national advice is likely to under report but be robust in those it does report.**

The indicator does not rely on the quality of HES data coding (all hospital admissions are included). It does rely on the quality of death certification data. We suggested the publication of various contextual indicators that should address this. After the MRG meeting, clinical coders expressed concern that VTE isn't a code expressed in ICD-10, it is not a disease entity, but a term that encompasses PE and DVT, but this isn't explicit in ICD-10. This isn't considered a concern for this indicator.

# Revised paperwork (6th February 2014):

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| Introduction |
| Mortality rate from recorded venous thromboembolism (VTE) that occurred within 90 days of discharge from hospital, per 100,000 adult hospital admissions.The reason for hospital stay (diagnosis/procedure) is not restricted to VTE related episodes and includes day cases. Such deaths are those where VTE is specified on the Medical Certificate of Cause of Death (MCCD) as being one of the conditions leading to, or directly causing death (Part 1, sub-sections a-c).There is currently no other indicator that measures the outcomes for patients in hospital who subsequently die from a VTE. This new patient safety measure considers a crucial outcome, death, and should drive efforts to improve the prevention, detection and treatment of VTE before it causes death. |

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| Indicator Details |  |
| Rationale / usefulness  | The main improvement action is to drive down the number of deaths from VTE.In addition to the main indicator, ‘deaths from VTE’, the following ‘contextual indicators’ are suggested to sit alongside this to provide further detail as follows – 1. the number of diagnoses/history of VTE recorded for hospital episodes (for this I would say in any position, not just primary),
2. the number of people who had a VTE diagnosed or history and who died from a VTE or VTE related condition within 90 days of discharge
3. and the total number of people that died from a VTE or related condition where there was no record of VTE or history of VTE within 90 days of discharge (if 2 and 3 are added together, it will give the number of people in total who died from a VTE within 90 days of discharge)

The time period –within 90 days post discharge - has been chosen, as opposed to 30 or 60 days, as there is evidence to suggest that VTE after surgery is substantially increased in the first 12 postoperative weeks (see Million Women study and more recently the QUORU study – attached).This new indicator is a further step in the development of a set of robust patient safety outcome measures to monitor care in hospital.Prevention of VTE associated with hospitalisation is a key patient safety priority for hospitals.This supersedes a previous definition for a VTE indicator on the ‘incidence of healthcare-related VTE’. This is because distinguishing between healthcare and community-related VTE proved unreliable in the originally intended data source – Hospital Episode Statistics (HES). Measuring death as an outcome, by linking HES with ONS Mortality data, should also drive efforts to improve the prevention, detection and treatment of VTE before it causes death. |
| Data source | Hospital Episode Statistics (HES) – HSCIC and Mortality Statistics by cause – ONS, from 2007-08. |
| Construction  | ***Summary description of the calculation:***The number of adults who were admitted to hospital for any reason (NOT just episodes where VTE had been diagnosed) who subsequently died up to 90 days post discharge according to the Medical Certificate of Cause of Death (MCCD) where VTE was one of the conditions leading to, or directly causing death (part 1, sub-sections a to c) per 100,000 adult hospital admissions.This indicator looks at ADULTS ONLY.***Calculation type:*** Rate per 100,000 adult hospital admissions***Denominator:*** The total number of adult hospital admissions.***Numerator:***Annual figure of the number of deaths 90 days post discharge, for a particular financial year, from hospital where cause of death is VTE – derived from HES data on adult inpatient admissions (for any reason) and data from death certificates.A VTE death is defined as one in which a death meets two criteria:1. one of the listed VTE ICD-10 codes appear anywhere in Part 1 of the Medical Certificate Cause of Death; and

is associated with a hospital episode with any diagnosis List of ICD-10 codes for diagnosis of VTE.These are the codes agreed by ‘experts’, including the CMO’s Expert Working Group historically. These codes are utilised in relevant peer-reviewed publications as per the attachments to this application.**ICD10 Code Name**I260 Pulmonary embolism with mention of acute corpulmonaleI269 Pulmonary embolism without mention of acute corpulmonaleI800 Phlebitis/thrombophlebitis superficial vessels of lower extremitiesI801 Phlebitis and thrombophlebitis of femoral veinI802 Phlebitis/thrombophlebitis of other deep vessels of lower extremitiesI803 Phlebitis and thrombophlebitis of lower extremities, unspecifiedI808 Phlebitis and thrombophlebitis of other sitesI809 Phlebitis and thrombophlebitis of unspecified siteI821 Thrombophlebitis migransI822 Embolism and thrombosis of vena cavaI823 Embolism and thrombosis of renal veinI828 Embolism and thrombosis of other specified veinsI829 Embolism and thrombosis of unspecified veinO222 superficial thrombophlebitis in pregnancy –O223 Deep phlebothrombosis in pregnancyO229 Venous complication in pregnancy, unspecifiedO871 Deep phlebothrombosis in the puerperiumO87.0 Superficial thrombophlebitis in the puerperiumO87.9 Venous complication in the puerperium, unspecifiedO88.2 Obstetric blood-clot embolism – covers obstetric/puerperal (pulmonary) embolism NOS***Statistical Methods / Risk adjustment variables:***Initially a National presentation of data is required and therefore no standardisation. This is a first step in the process. Over time, as standardisation methods are develop, we would look to present further breakdowns of the figures and employ standardisation techniques to control for age and gender as there are well established associations between VTE and age and VTE and gender. An association with deprivation was considered but there is no current evidence linking VTE risk with deprivation.For age groups (ADULTS only) - 19-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64, 65-69, 70-74, 75-79, 80-84, 85+***Other (Quality assurance/interpretation/known limitations):***More information about the HES-ONS linked dataset, including the methodology used for linkage is available at http://www.hscic.gov.uk/article/2677/Linked-HES-ONS-mortality-data. Both HES and ONS Mortality data are published on a provisional basis monthly, with annual refreshes (financial year for HES data and calendar year for ONS data) to provide a finalised position on the monthly data. There is a very small (less than 1%) difference between the provisional and final ONS figures. For the purposes of the NHS OF, only the annual refresh data will be used initially. There is a wider work stream progressing looking at the feasibility of using more frequent provisional data. If this proves fruitful, it could be considered for this indicator in the future. |
| Potential Issues | VTE is difficult to diagnose even after death, and interpretation is difficult, so it is hoped that this indicator will improve diagnosis rates.Risk of gaming by some providers in terms of them not coding episodes as VTE but something else so their numbers appear lower.This indicator does not rely on the quality of HES data coding as all hospital admissions are included. It does rely on accurate recording of the cause of death on the death certification, which is a usually accepted source of information for other approved indicators in the NHS Outcomes Framework. Research literature actually suggests that the deaths recorded in the UK are at the level expected from international studies.Death certification is an accepted source of information on cause of death, this indicator uses this data linked to HES – the mortality-HES linked file. In this file, patients in the two databases are matched using the unique identifier, HESID. They are then merged into one mortality master file to ensure one record per patient. Almost 95% of deaths show the same date in HES and ONS based on the linked mortality data. |
| Supporting DocumentsProvide links to any additional documentation used to support discussion at MRG | * NICE Clinical Guideline CG92 <http://www.nice.org.uk/nicemedia/live/12695/47195/47195.pdf>
* CHEST article - <http://www.ncbi.nlm.nih.gov/pubmed/23681495>
* Clinical coding for venous thromboembolism – A report on the findings of a review of clinical coding for VTE undertaken at Taunton & Somerset NHS FT (electronic copy attached to application)
* HEART article - <http://heart.bmj.com/content/early/2013/09/13/heartjnl-2013-304479.abstract>
* Incidence of and mortality from venous thromboembolism in a real-world population: The Q-VTE Study Cohort, The American Journal of Medicine.
* Duration and magnitude of the postoperative risk of venous thromboembolism in middle aged women: prospective cohort study, Sweetland et al, BMJ, 2009.
 |
| Additional Information / Sample Data : | Clinical advice has been provided by members of the VTE Programme Board, which is responsible for the National VTE Prevention Programme, including Roopen Arya from KING'S COLLEGE HOSPITAL NHS FT and by the Quality and Outcomes Research Unit (QUoRU) based at University Hospitals Birmingham whose research, attached as supporting documentation, informed this proposaland drove the decision to focus on deaths rather than healthcare incidence of VTE. |

# MRG Recommendations, Comments & Updates:

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| Summary of discussion – 6th February 2014 |
| The discussion is a continuation of discussion held at MRG 9/01/14 which were incomplete due to time constraints.Speaking in support of the application, Frances Healy started discussion by taking MRG through the questions which were asked during the last meeting, and explaining the responses which were provided in the paperwork.Advice was sought from MRG appraisers regarding whether the indicator should be titled “Deaths from recorded VTE…” as although this was a recommendation coming out of the previous meeting, the applicant was unsure as to whether this was necessary, as other indicators do not specify this [recorded] and it does not add much to the clarity of the title. Paul Iggulden suggested that [the original suggestion] was not necessary upon reflection; however that within the [original] recommendation there was a subtle point that should not be lost. Sindy Holschumacher highlighted that this point would be in the quality statement.Regarding the previous question from MRG about how this indicator takes us closer to the stated rationale than a straight forward mortality from VTE indicator, the applicant explained that this is an issue for all indicators within domain 5 of the NHS OF. Safety and effectiveness do not have a perfect divide; however they want indicators in domain 5 to focus more on safety than the effectiveness of treatment. Ideally, the indicator would only measure preventative aspects of VTE, however currently there is no data source for this. By combining the hospital episode and the death, there are elements of effectiveness as well as safety, however the main improvement is likely to be made in safety, and it is a technical difference anyway. Outcomes of a patient are not only about safety of prevention but the safety of treatment. If the indicator solely measured all deaths from VTE, it would be diluted by a relatively small number of cases that no one has had the opportunity to treat or prevent, which is why this combination that makes it more about safety than purely effectiveness has been chosen, making it more suited to domain 5. An issue was highlighted by Paul Fryers, who explained that although measuring all deaths from VTE would mean that the indicator would be diluted with patients for whom there was no chance of intervention, this would capture patients for whom there was a chance to intervene but did not make it to admission, which the current indicator does not. He reiterated that the indicator is capturing one set of patients for whom VTE should have been prevented, however it is missing another. He also asked for some clarification into the distinction the applicant was making between safety and effectiveness. The applicant explained that many people think of safety in terms of “you came into hospital for one thing, and we gave you another”. However, if you look at indicators such as NHS OF 5c which measures avoidable deaths from healthcare, about 2/3 of deaths are omissions; not giving people effective care. Therefore, the boundary between safety and effectiveness is blurred, as not giving people effective treatment is a safety issue. The biggest reason to frame it as safety and the reason it has been linked with hospital episodes is that this is the place where it is known that great improvements have been made, but there is much greater improvement that could be made. It has been shown that about 50% of the acquiring is preventable, but how much better we can get at treating VTE once it has been diagnosed is unclear. The measurement is on the boundary between safety and effectiveness, however by linking it to hospital episodes, there will be a higher proportion of preventable cases compared to if all VTE deaths were measured.The chair commented that there is no perfect indicator for this, however feels that overall the group are happy with the information presented to them. Paul Iggulden commented that he was happy that despite the issues, the indicator did seem to clearly state what it did and did not measure. However, he sought further information as to the rationale of including day cases, as he wondered whether there was time to effectively detect and treat a patient who was a day case.Gerry Firkins added that one thing that may change by including day cases is the case mix, and it is likely to skew the results to lower risk patients and make the indicator smaller. The applicant replied by explaining that it is standard practice to risk assess day case patients if they require it. The risk and benefits may be less with day cases, but it is still required to risk assess and give prophylaxis if required. This may be an issue when in future the indicator is broken down to CCG level, as it is known that levels of day cases are different. The decision around day cases was taken as it was thought that it is the most pragmatic way forward.Gerry continued that he thought clinicians can declare a group of patients not included in the VTE assessment, and although this has to be signed off and agreed, this may have an impact on the differing numbers of day cases. The applicant explained that they are happy to include in the denominator patients who have had a risk assessment of VTE en masse as opposed to individually.Gerry reiterated Paul’s point that as there is a wide variation in day cases nationally, it may be best to exclude these from the indicator. The applicant was aware of their point of view, however felt that in terms of trying to improve VTE assessments, if day cases were excluded there would not be an incentive to risk assess those patients and if for example a trust felt that they did not need to risk assess any day cases despite known risk factors, this bad practice would not be illustrated by the indicator.The chair concluded that as long as the paperwork clearly states what the indicator is and is not measuring and since there is no perfect indicator for VTE that the group should be satisfied with the explanation given.John Sharp asked for clarification regarding whether this is only a safety issue for hospitals or whether this should be a safety priority for those caring for the patient after discharge. The applicant explained that there isn’t much of an opportunity to intervene once the patient has left hospital. She continued that although this is a simplification and for some patient groups it may be possible, the real missed opportunity for all patients who have been admitted to hospital.John Sharp queried that although the indicator itself does not rely on the quality of HES data, the paperwork suggests that we are trying to apply context to the indicator by relying on HES data coding. The applicant explained that the contextual indicator will just show the number of admissions for treatment of VTE, so you can compare the two against each other, being fully aware that the contextual indicator completeness may not be to a high standard. However, this will be outlined in the Quality Statement.The chair made clear that this application is for a national indicator only and if there were to be any further breakdowns, the indicator would have to return to the process.The applicant responded to a question raised during the last meeting (Number 14) explaining that VTE is concept that covers PE and DVT and there is nothing in ICD 10 that mentions the VTE as a disease group. But it is a very well accepted term to encompass two sets of indicators in ICD-10 so we would hope that that is not a problem. The list of ICD-10 codes are those that are accepted elsewhere, such as in the NICE guidelines. This is also the clinical and the public understanding of VTE.Chris Dew queried whether the list of ICD-10 codes matched the list provided by the national clinical coding helpdesk, as this is what will be used by the HSCIC in other indicators. The applicant explained that they are using the codes for PE and DVT and they would hope that they matched. Chris continued by saying that this would have to be checked.The chair asked for any final thoughts on the indicator, to which Paul Iggulden responded that although he was reasonable happy with the indicator at a technical level, he still has issues around the rationale and whether this indicator at a national level was going to add to our understanding. The applicant hoped that there would be improvements resulting from it which would show its importance.Paul Iggulden then queried why there wasn’t another VTE indicator in the NHS OF within domain 1. The applicant explained that domain 1 has indicators representing major causes of death and currently, there are not many deaths from VTE, meaning there are higher priorities for the domain.Paul Fryers explained that if it was possible to look at this indicator next to the data for overall mortality from VTE, it would likely be, in his opinion, identical, highlighting that overall mortality could be measured. Sindy Holschumacher suggested that this be provided as a contextual indicator, to which the other applicants and MRG members agreed would be useful.John Sharp suggested that in the potential issues section of the paperwork, the word “gaming” should be changed to “risk of submission of false or misleading data”. Paul Iggulden added a quick comment that in the rationale section of the paperwork, it would be better to put the last couple of sentences first, as this really pins down the purpose of the indicator.Paul Fryers added that in the paperwork, some of the ICD-10 codes that should start with an “I” start with a “1”, which needs changing. He also questioned whether O codes would appear as a main cause of death on a death certificate, as he thought this was not the case. The applicant agreed to check this after the meeting.Gerry Firkins was curious to know whether ethnicity had been studied, however the applicant explained that although there were known variances between ethnicities, numbers were too small to investigate this within the indicator. However, they are hoping that there would be a clinical audit as well and processes and that might tell us more about whether ethnic minorities would get equal representation. |

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| Recommendation(s): |  |
| Ref code**IAP00368-01**Made: 06/02/14 | Provide overall mortality from VTE as a contextual indicator. |
| Update: Made: xx/xx/xxxx | Overall mortality from VTE will be provided as a contextual indicator alongside the indicator values and a few other contextual indicators. |
| Ref code**IAP00368-02**Made: 06/02/14 | Regarding the list of ICD-10 codes:* Check whether O codes appear as main causes of death on a death certificate.
* Update the paperwork to ensure that all codes start with a letter rather than a number
 |
| Update: Made: xx/xx/xxxx  | This has been checked and it is the case that ‘O’ codes appear as the main cause of death although there are only a handful of instances. |
| Ref code**IAP00368-03**Made: 06/02/14 | * Further investigate that the list of ICD-10 codes used matches that provided by the national clinical coding helpdesk.
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| Update: Made: 20/06/2014 | The final list of ICD-10 codes included in the indicator matches this provided by the clinical coding team. |

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| **Item 3.2:** **Decision** |
| MRG recommend the indicator for discussion at IGB following updates to the recommendations listed above. |

# MRG Application Revisions:

To be completed where changes to the methodology are made by the applicant during the appraisal [i.e. subsequent to the initial application form]

A new section is to be added for each new set of revisions to go to MRG.

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| Revision Date: |  |
| General Comments / Reasoning: |  |
| Revisions: |  |
| Indicator Title |  |
| Data source |  |
| Construction |  |
| Updated Potential Issues |  |

# Indicator Governance Board – Presentation Summary

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| **Indicator Title** | **Delayed Transfers of Care - Proportion of beds occupied by delayed transfer patients in provider organisations.** | IAS Ref Code: | IAP00368 |
| Indicator Set | Patient Reported Outcome Measures (PROMs) |  |  |

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| Description | Mortality rate from recorded venous thromboembolism (VTE) that occurred within 90 days of discharge from hospital, per 100,000 adult hospital admissions.The reason for hospital stay (diagnosis/procedure) is not restricted to VTE related episodes and includes day cases. Such deaths are those where VTE is specified on the Medical Certificate of Cause of Death (MCCD) as being one of the conditions leading to, or directly causing death (Part 1, sub-sections a-c).There is currently no other indicator that measures the outcomes for patients in hospital who subsequently die from a VTE. This new patient safety measure considers a crucial outcome, death, and should drive efforts to improve the prevention, detection and treatment of VTE before it causes death. |

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| Initial IGB discussion  |  | Further discussed |  |

**Strategic Considerations & Implications**

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| Applicant / Sponsor Organisation |  | Assurance process funded? | **Yes**[ ] **No**[ ]  |  |

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| Indicator rationale | The main improvement action is to drive down the number of deaths from VTE.In addition to the main indicator, ‘deaths from VTE’, the following ‘contextual indicators’ are suggested to sit alongside this to provide further detail as follows – 1. the number of diagnoses/history of VTE recorded for hospital episodes (for this I would say in any position, not just primary), 2. the number of people who had a VTE diagnosed or history and who died from a VTE or VTE related condition within 90 days of discharge3. and the total number of people that died from a VTE or related condition where there was no record of VTE or history of VTE within 90 days of discharge (if 2 and 3 are added together, it will give the number of people in total who died from a VTE within 90 days of discharge)The time period –within 90 days post discharge - has been chosen, as opposed to 30 or 60 days, as there is evidence to suggest that VTE after surgery is substantially increased in the first 12 postoperative weeks (see Million Women study and more recently the QUORU study – attached). |
| Basis for rationale  | This new indicator is a further step in the development of a set of robust patient safety outcome measures to monitor care in hospital.Prevention of VTE associated with hospitalisation is a key patient safety priority for hospitals.This supersedes a previous definition for a VTE indicator on the ‘incidence of healthcare-related VTE’. This is because distinguishing between healthcare and community-related VTE proved unreliable in the originally intended data source – Hospital Episode Statistics (HES). Measuring death as an outcome, by linking HES with ONS Mortality data, should also drive efforts to improve the prevention, detection and treatment of VTE before it causes death.Clinical advice has been provided by members of the VTE Programme Board, which is responsible for the National VTE Prevention Programme, including Roopen Arya from KING'S COLLEGE HOSPITAL NHS FT and by the Quality and Outcomes Research Unit (QUoRU) based at University Hospitals Birmingham whose research informed this proposal and drove the decision to focus on deaths rather than healthcare incidence of VTE. |
| Calculation Summary | The number of adults who were admitted to hospital for any reason (NOT just episodes where VTE had been diagnosed) who subsequently died up to 90 days post discharge according to the Medical Certificate of Cause of Death (MCCD) where VTE was one of the conditions leading to, or directly causing death (part 1, sub-sections a to c) per 100,000 adult hospital admissions.This indicator looks at ADULTS ONLY.*Calculation type*: Rate per 100,000 adult hospital admissions*Denominator:* The total number of adult hospital admissions.*Numerator:*Annual figure of the number of deaths 90 days post discharge, for a particular financial year, from hospital where cause of death is VTE – derived from HES data on adult inpatient admissions (for any reason) and data from death certificates.A VTE death is defined as one in which a death meets two criteria; one of the listed VTE ICD-10 codes appear anywhere in Part 1 of the Medical Certificate Cause of Death; andis associated with a hospital episode with any diagnosis.The ICD-10 codes are agreed by ‘experts’, including the CMO’s Expert Working Group historically. These codes are utilised in relevant peer-reviewed publications. |
| Risks & assumptions | VTE is difficult to diagnose even after death, and interpretation is difficult, so it is hoped that this indicator will improve diagnosis rates.Risk of gaming by some providers in terms of them not coding episodes as VTE but something else, so their numbers appear lower. |
| IG Considerations [e.g. release of under-lying data, intermediaries access to data, data ownership impact on production] | *Data Source:* Hospital Episode Statistics (HES) – HSCIC and Mortality Statistics by cause – ONS, from 2007-08.This indicator is derived from existing national data sets – HES (run by the HSCIC) and ONS mortality data – both have been used by HSCIC before to construct other quality indicators. |
| Potential impacts on other business areas [inc outstanding generic issues] |  |
| Implementation Method[inc production funding] | This indicator is derived from existing national data sets – HES (run by the HSCIC) and ONS mortality data – both have been used by HSCIC before to construct other quality indicators. As such, there is not expected to be additional costs of collection. The costs of construction, dissemination and presentation are within the HSCIS’s current remit to produce indicators for the NHS Outcomes Framework. |

**Development Advice & Peer Review**

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| Range of input[Have relevant business areas contributed e.g. clinical assurance?]  | Clinical advice has been provided by members of the VTE Programme Board, which is responsible for the National VTE Prevention Programme, including Roopen Arya from KING'S COLLEGE HOSPITAL NHS FT and by the Quality and Outcomes Research Unit (QUoRU) based at University Hospitals Birmingham whose research informed this proposal and drove the decision to focus on deaths rather than healthcare incidence of VTE. |
| Peer Reviewers: | Advice was sought from the Classifications Team |
| Peer Review summary: | See attached document |

**Record of MRG Discussion**

Discussion dates: 09/01/2014, 06/02/2014 By:

|  |  |
| --- | --- |
| Julie Stroud (chair) | HSCIC |
| Chris Dew (vice-chair) | HSCIC |
| Alyson Whitmarsh | HSCIC |
| Paul Iggulden  | HSCIC |
| Irena Begaj  | UH Birmingham |
| John Sharp | HSCIC |
| Paul Fryers | Public Health England |
| Gerry Firkins | HSCIC |

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| Summary of MRG discussions: | **Discussion 9th January*** Sam Alderson clarified that the indicator measures post discharge and not post admission as indicated in some of the supporting paperwork.
* Jonathan Hope noted that a similar indicator had been rejected during a (separate) development process in the past and queried how much things had moved on. He cited that it was rejected on the basis that VTE is only diagnosed in 25% of cases, and that the issue was around the ability to diagnose VTE (rather than HES coding issues), and queried how this indicator handled this issue.
* In response, Francis Healy put to the group that if something is “recorded nowhere and known to no one” then there will not be an indicator of it, so that debate has continued. There is an acceptance of the limitation of HES data, which will not be relied upon. Instead the indicator relies on VTE being a cause of death using the coding from the death certification associated with a hospital episode. The indicator proposed is, after debate, considered the best available option.
* Jonathan Hope asked that given the limitations, what does the indicator indicate?
* In response Francis Healy put forward her belief that by focusing on cause of death there is enough information to support an informative clinical patient safety message.
* Paul Iggulden queried how the indicator defined helps address the two statements in the rationale “looking for a set of robust patient safety outcome measures to monitor care in hospitals”, and “prevention of VTE associated with hospitalisation as a key safety priority”.
* Francis Healy responded there is a logic in that if someone is admitted for any condition and then the hospital fails to get the prophylaxis right then the patient could develop VTE either in hospital or within the 90 days afterwards which is the link to hospitalisation and VTE
* Other safety opportunities are when the ideal opportunity to prevent them all together are missed, then it should be detected early before it kills. Broadly speaking it will only be an undetected and untreated DVT that cause the fatal pulmonary embolism. That is why there is a link and trajectory between hospital episode and death because to reach that far not only has failed in prevention and the detection and early treatment that mean the patient did have a VTE but did not die.
* Roopen Arya suggested that having a VTE indicator in the outcome framework would be a great opportunity to move to the next step in the prevention programme which is to link the risk assessment to the appropriate prophylaxis and improving the outcomes.
* Chris Dew asked whether action could be taken on one national level number.
* Francis Healy replied that a national number is useful as the VTE prevention programme has been a national programme and everyone has more or less changed practice at the same time so it wasn’t necessary to break it down to hospital level for it to be useful.
* Andy Sutherland put forward his concern that because of the data quality issues, whether the indicator was a proper representation of what the developer thinks it is. In addition it was suggested that if there was a category of developmental indicator then MRG would have felt more comfortable with the proposal, but were less happy to define it as assured when there are significant concerns around the completeness of the data.

The meeting drew to a close without finalising discussion on the indicator. It was suggested that the indicator be brought back at the next meeting to continue the appraisal. **Recommendations and responses – 9th January 2014*****Was any consideration given to ‘case mix’ as I assume there is a difference between a death in a seriously ill cancer patient who may well die from other aspects of their condition anyway, and someone who has a relatively simple operation and develops a VTE as a result***Yes, the indicator will include VTE in any position on the death certificate and as long as coding is consistent it will be meaningful. We know there will be medical and surgical cases but no overall impact is expected on outcomes. We agree that even when equally effective prevention and treatment of VTE is given some patients are more likely to die from VTE than others. But we do not believe this is a problem for this indicator, as it is an outcome framework measure and so will not be used to compare commissioning populations/providers with different case mix, simply to monitor improvement from national (and later local) baselines. It is conceivable that increasing rates of serious comorbidities would create a small natural tendency for this indicator to rise over time if there were no improvement in prevention and treatment of VTE, but as the research evidence presented to the group indicates the scope for reductions in VTE deaths after a hospital episode through improvement in prevention and treatment is substantial, we are confident it can be used to demonstrate improvement from baseline without case mix adjustment.***Are day cases included? [I noted that in the Lester paper they gave different results].***Yes, day cases are still classed as an admission and risk assessed, these are large in number now and too complex to exclude. In addition, the borderline between what cases are treated as day cases and inpatients varies between hospitals and the proportion of day cases constantly increases. Including both therefore future-proofs the indicator.***That I think it would be better to consider calling it ‘Deaths from recorded VTE…’ as we (clearly) can’t say anything about unrecorded VTE.***Okay, the indicator will be 'Deaths from recorded VTE within 90 days of discharge from hospital'. Whilst we are content with this we would ask the group to confirm that referring to recorded deaths rather than deaths is consistent with other indicators that rely on death certification.***Regarding Standardisation – if the indicator is being looked at over time, would like to see breakdown by age (from a future proofing perspective)***We are requesting data from HSCIC to allow us to consider standardisation, which we agree would future-proof the indicator. However, as the research evidence presented to the group indicates the scope for reductions in VTE deaths after a hospital episode through improvement in prevention and treatment is substantial, we are confident the indicator can be used to demonstrate improvement from baseline even without age adjustment.***How does the indicator proposed take us closer to the stated rationale than a straight forward mortality from VTE?***The indicator has been defined in this way to ensure it is measuring a key patient safety outcome, and not just the effectiveness . If the indicator was intended as an indicator of effectiveness of healthcare, straightforward mortality would be appropriate. The indicator has been defined in this way to ensure it is measuring a key aspect of patient safety for the safety domain of the outcomes framework. Linking deaths from VTE to a recent hospitalisation increases the proportion of deaths in the indicator where an omission of prophylaxis or errors in diagnosis or treatment are likely to contribute to the outcome, and ensures exclusion of patients who had no recent contact with hospital services and where therefore no clear opportunity to protect their safety would have existed. ***As it stands a range of data quality and coding concerns, along with interpretation concerns (is the death 90 days post discharge the result of an unknown VTE pre hospital episode or a reflection of poor care whilst in hospital is key and as I understand it separating these out not possible) make this questionable as a national indicator. If this were to appear in NHS OF as a single year, then we would want to compare the figure – over time, and disaggregated to CCG level. Both of these raise significant concerns regarding standardisation (as the application notes) and limit the value of the proposed measure as it stands.***The indicator does not rely on the quality of HES data coding (all hospital admissions are included). It does rely on the quality of death certification data. We are unsure if the indicator group believes death certification data is generally too unreliable for indicator use (we assume not) or believes there are particular issues with VTE recording on death certificates. If the latter, we think there may be a misunderstanding. There has in the past been speculation that VTE death certification was seriously inaccurate, as a much higher figure of 25,000 VTE deaths annually in the UK was repeatedly cited. The source of this figure was inaccurate evidence from an industry representative to a parliamentary select committee; the actual research literature suggests that the deaths recorded in the UK are at the level expected from international studies. A possible additional source of misunderstanding is incidental findings of VTE as post-mortem (especially where patients have been immobile in their last days of life); these may be missed in patients not subject to post-mortem, but as these were not a cause of death would not have an effect on the data quality for this indicator which is drawn from part 1 of death certification. See notes above on standardisation by comorbidities or age. Comparison over time is the only purpose of the indicator, and we would be content for it to be approved as a national-level indicator, with disaggregation to CCG subject to a further application***There seems to be an assumption that a patient dying 90 days from discharge is a lost opportunity, what if prophylaxis was not appropriate at discharge (e.g. haemorrhagic stroke)? What if DVT or risk of was not present at discharge? Have the impact of these 2 areas been assessed?***Yes, this has been considered - based on the Million Women Study we have a handle on inappropriate prophylaxis and measure it through the Safety Thermometer. We appreciate that not every patient should receive prophylaxis and that not every death from VTE is preventable. The indicator addresses an outcome where there is good evidence that safer care can improve outcomes; we do not believe indicator criteria requires a condition to be entirely preventable. ***The evidence base of 90 days post discharge from the QuORU study there was no significant benefit of VTE assessment for day cases this isn’t reflected in the numerator*.**We have included day cases in the indicator as per the earlier point, it would be too difficult to exclude this large number of cases. The borderline between what cases are treated as day cases and inpatients varies between hospitals and the proportion of day cases constantly increases. Including both therefore future-proofs the indicator.**Discussion – 6th February 2014*** MRG questioned how this indicator takes us closer to the stated rationale than a straight forward mortality from VTE indicator.
* The applicant explained that this is an issue for all indicators within domain 5 of the NHS OF. Safety and effectiveness do not have a perfect divide; however they want indicators in domain 5 to focus more on safety than the effectiveness of treatment. Ideally, the indicator would only measure preventative aspects of VTE, however currently there is no data source for this. By combining the hospital episode and the death, there are elements of effectiveness as well as safety, however the main improvement is likely to be made in safety. If the indicator solely measured all deaths from VTE, it would be diluted by a relatively small number of cases that no one has had the opportunity to treat or prevent .
* MRG responded that although measuring all deaths from VTE would mean that the indicator would be diluted with patients for whom there was no chance of intervention, this would capture patients for whom there was a chance to intervene but did not make it to admission, which the current indicator does not.
* The applicant explained that many people think of safety in terms of “you came into hospital for one thing, and we gave you another”. However, if you look at indicators such as NHS OF 5c which measures avoidable deaths from healthcare, about 2/3 of deaths are omissions; not giving people effective care. Therefore, the boundary between safety and effectiveness is blurred, as not giving people effective treatment is a safety issue. The biggest reason to frame it as safety and the reason it has been linked with the hospital episode is that this is the place where it is known that great improvements have been made, but there is much greater improvement that could be made. It has been shown that about 50% of the acquiring is preventable, but how much better we can get at treating VTE once it has been diagnosed is unclear. The measurement is on the boundary between safety and effectiveness, however by linking it to hospital episodes, there will be a higher proportion of preventable cases compared to if all VTE deaths were measured.
* The chair commented that there is no perfect indicator for this, however feels that overall the group are happy with the information presented to them.
* MRG sought further information as to the rationale of including day cases, as this is likely to change the case mix, and skew the results to lower risk patients and make the indicator smaller.
* The applicant replied by explaining that it is standard practice to risk assess day case patients if they require it. The risk and benefits may be less with day cases, but it is still required to risk assess and give prophylaxis if required. This may be an issue when in future the indicator is broken down to CCG level, as it is known that levels of day cases are different. The decision around day cases was taken as it was thought that it is the most pragmatic way forward.
* MRG reiterated the point that as there is a wide variation in day cases nationally, it may be best to exclude these from the indicator. The applicant was aware of their point of view, however felt that in terms of trying to improve VTE assessments, if day cases were excluded there would not be an incentive to risk assess those patients and if for example a trust felt that they did not need to risk assess any day cases despite known risk factors, this bad practice would not be illustrated by the indicator.
* The chair concluded that as long as the paperwork clearly states what the indicator is and is not measuring and since there is no perfect indicator for VTE that the group should be satisfied with the explanation given.
* MRG queried that although the indicator itself does not rely on the quality of HES data, the paperwork suggests that we are trying to apply context to the indicator by relying on HES data coding. The applicant explained that the contextual indicator will just show the number of admissions for treatment of VTE, so you can compare the two against each other, being fully aware that the contextual indicator completeness may not be to a high standard. However, this will be outlined in the Quality Statement.
* Chris Dew queried whether the list of ICD-10 codes matched the list provided by the national clinical coding helpdesk, as this is what will be used by the HSCIC in other indicators. The applicant explained that they are using the codes for PE and DVT and they would hope that they matched.
* The chair asked for any final thoughts on the indicator, to which members responded that although they were reasonable happy with the indicator at a technical level, it still has issues around the rationale and whether this indicator at a national level was going to add to understanding. The applicant hoped that there would be improvements resulting from it which would show its importance.
* Lastly, MRG suggested that the total number of deaths from VTE is provided as contextual information, to which the applicant agreed.

.Provide overall mortality from VTE as a contextual indicator.Regarding the list of ICD-10 codes, check whether O codes appear as main causes of death on a death certificate. Further investigate that the list of ICD-10 codes used matches that provided by the national clinical coding helpdesk. |

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| *Outcome of MRG consideration:* | 1. **No significant issues identified**
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|  | 1. **No significant issues on basis of completion of outstanding actions**
 |[ ]   |
|  | 1. **Some concerns expressed as caveats or limitations**
 |[x]   |
|  | 1. **Significant reservations**
 |[ ]   |
|  | 1. **Unresolved issues**
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| MRG statement of recommendation: | MRG recommend the indicator for discussion at IGB following updates to the recommendations listed above. |

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# IGB Recommendations, Review and Sign-off

IGB – Additional Recommendations:

[Add new section as necessary]

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| **Recommendations & Updates** | Made: xx/xx/xx |
| Comments & Recommendations[List additional comments and recommendations raised by IGB] |  |

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| Action required: | **IGB Update Not Required**  |[ ]  **Further Update IGB** |[ ]  **Refer To MRG**  |[ ]   |

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| Update:Made:  |  |

Review:

**Review**

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| Review Timescale |  |
| **1 year** |[x]
| **3 years** |[ ]
| **Other:** |[ ]

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| Rationale [Issues to consider – Changes to process, policy data source, coding definitions HES definitions ]The indicator will have a review period of 1 year in which action on the following will be re-visited: • Professional bodies have been engaged with a view to encouraging training for their members to make sure coding is more consistent.• Evidence is presented of the usefulness of the indicator in terms of its impact and whether it is sensitive enough to detect the effect of increased screening. • That consideration has been given the implications (for this indicator) of the proposed introduction of a “present at admission flag” for VTE in the CDS. |

IGB Sign-off:

**Indicator Assurance Process Output**

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| *Final Appraisal Status* | 1. **Assured**
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|  | 1. **Assured with Comments**
 |[x]   |
|  | 1. **Failed Assurance**
 |[ ]   |

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| Basis of Sign-off[Detail caveats and limitations ] | In recognition of the value of improving patient safety measures, the indicator methodology is signed off as assured for inclusion in the indicator library on the basis that the following points are acted on:• Clarity is provided (to the IGB Chair) as to whether the denominator captures one discharge person or number of attendances.• There is a clear statement in the indicator metadata / quality statement that the indicator is reported as a single national figure and should not be used for comparison between providers. If and where Trusts are interested in using this indicator they should instead be encouraged to do statistical process control.• That the supporting metadata conveys to users the wider context of the indicator in that it represents a step in moving from having input measures relating to VTE (around assessment) to having outcome measures (around deaths) however there are known limitations around the data quality in terms of coding inconsistency and under recording. |
| Sign-off Date | 22/07/2014 |