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Original Article

# Recording Adverse Events Following Joint Arthroplasty: Financial Implications and Validation of an Adverse Event Assessment Form

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ABSTRACT

*Background:* In Ireland, funding of joint arthroplasty procedures has moved to a pay-by-results national tariff system. Typically, adverse clinical events are recorded via retrospective chart-abstraction methods by administrative staff. Missed or undocumented events not only affect the quality of patient care but also may unrealistically skew budgetary decisions that impact fiscal viability of the service. Accurate recording confers clinical benefits and financial transparency. The aim of this study was to compare a prospectively implemented adverse events form with the current national retrospective chart-abstraction method in terms of pay-by-results financial implications.

*Methods:* An adverse events form adapted from a similar validated model was used to prospectively record complications in 51 patients undergoing total hip or knee arthroplasties. Results were compared with the same cohort using an existing data abstraction method. Both data sets were coded in accordance with current standards for case funding.

*Results:* Overall, 114 events were recorded during the study through prospective charting of adverse events, compared with 15 events documented by customary method (a significant discrepancy). Wound drainage (15.8%) was the most common complication, followed by anemia (7.9%), lower respiratory tract infections (7.9%), and cardiac events (7%). A total of €61,956 ($67,778) in missed funding was calculated as a result.

*Conclusion:* This pilot study demonstrates the ability to improve capture of adverse events through use of a well-designed assessment form. Proper perioperative data handling is a critical aspect of financial subsidies, enabling optimal allocation of funds.



Joint arthroplasty is a safe procedure that improves patient quality of life and is typified by low complication rates [1,2]. Nonetheless, with increased numbers of arthroplasties being performed worldwide and with concomitant increases in patient age and comorbidity, the relative frequencies of complications and of adverse events (AEs) following arthroplasty are increasing [3,4]. A major challenge for all clinical services is recognizing and addressing AEs, which in this surgical context may profoundly affect the patient experience, contributing to prolonged recovery times and increased hospital stays. The ramifications for financial viability of an institution may be substantial as well, particularly if such events are not identified or recorded within the tariff system. Mounting resource utilization is a likely consequence, thus creating negative fiscal pressures on the hospitals delivering these services [5].

Within the United Kingdom and Ireland, orthopedic healthcare models have been gravitating to pay-by-results funding, abandoning the block payments previously allotted in health service budgets. Public funding of joint arthroplasties in Ireland is transitioning to this activity-based funding model, with a national tariff paid per procedure. Such initiatives allocate subsidies retrospectively to orthopedic units, determined by operative volume. A standard basic payment is made for each procedure done, with additional subvention dictated by complexity of patient healthcare needs. Hence, payments are increased in difficult cases or in instances of documented postoperative complications. A coding category (A) signifying more, or (B) signifying less inherent complexity, is assigned upon admission of each inpatient. Any

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## PRIMARY TOTAL HIP & KNEE REPLACEMENT ADVERSE EVENT REPORTING

| Grade | Complication |
|---|---|
| 1 | Adverse event does not require treatment and has no adverse effect |
| 2 | Adverse event requires non-invasive treatment but has no long term effect |
| 3 | Requires invasive or complex treatment e.g. surgery/ ICU admission for monitoring, likely to have a temporary effect on outcome (<6 mths) |
| 4 | Requires invasive or complex treatment e.g. surgery/ ICU admission, likely to have a prolonged adverse effect on outcome(>6 mths) |
| 5 | Significant event. Serious life or limb threatening event |
| 6 | Adverse event resulting in death |

***An Adverse Event is any event (not the underlying disease process or injury) that requires additional monitoring /investigation or treatment during the patients acute hospital stay.***

| Complication | Yes √ | Grade | Date d/m/y |
|---|---|---|---|
| Adverse skin reaction e.g. blisters etc | y | | |
| Anaemia (requiring transfusion) | y | | |
| Allergic reaction due to_____ | y | | |
| Airway/ Ventilation | y | | |
| Bowel obstruction | y | | |
| Cardiac event | y | | |
| Constipation | y | | |
| Deep Wound Infection | o | | |
| Delirium | y | | |
| Deep Vein Thrombosis | o | | |
| Fat Embolism | o | | |
| GI bleed | y | | |
| Haematoma | o | | |
| Haemorrhage | y | | |
| Implant failure requiring revision | o | | |
| Local Dislocation | o | | |
| Nerve Injury *Please tick :* Due to Surgery { } Result of Injury { } | o | | |
| Pressure sore | o | | |
| Pneumonia | y | | |
| Pulmonary Embolism | y | | |
| Surgical Site Infection | y | | |
| Urinary retention | y | | |
| Urinary tract infection | o | | |
| Vascular injury *Please tick:* Due to Surgery { } Result of Injury { } | o | | |
| Wound dehiscence | y | | |
| Wound drainage | y | | |
| Other (*specify below)* | | | |

**Patient Addressograph**

**Type of Surgery**

_____

**Date of Surgery**

____ /____/____

**Type of Anaesthetic**:

Spinal General

*(Please circle)*

**Adverse Event Reporting Form (AEF)**

**Fig. 1.** Adverse Event Reporting Form (AEF).