



Restraint and venous thromboembolism in psychiatric hospitals: understanding risk and prevention

Restraint may be a modifiable risk factor, but more robust estimates of baseline risk are needed

Christoph Mueller,¹ Beatriz Pozuelo Moyano,² Victoria Speed³

¹ Institute of Psychiatry, Psychology and Neuroscience (IoPPN), King's College London, London, SE5 8AF, UK

² Service of Old Age Psychiatry, Department of Psychiatry, Lausanne University Hospital (CHUV), Lausanne, Switzerland

³ King's Thrombosis Centre, Department of Haematological Medicine, King's College Hospital NHS Foundation Trust, London, UK

Correspondence to: C Mueller (christoph.mueller@kcl.ac.uk)

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Hospital associated venous thromboembolism (VTE), defined as pulmonary embolism and deep vein thrombosis occurring during hospital admission or within 90 days of discharge,¹ is a major patient safety concern worldwide. The risk of hospital associated VTE among inpatients receiving psychiatric treatment remains poorly characterised, with overall reported rates ranging from 0.2% to 3.5% and increasing to 12.5% in higher risk groups.²

The linked study by Viuff and colleagues (doi:10.1136/bmj-2026-100016) advances our understanding of VTE risk in these inpatients by examining two important, and potentially modifiable, risk factors: mechanical restraint and chemical restraint.³ This nationwide Danish population based cohort study linked registries of involuntary measures and hospital diagnoses to examine 24 423 inpatients receiving psychiatric treatment who experienced a restrictive intervention. Based on the first restraint type recorded, about 40% were classified in the mechanical restraint group and 60% in the chemical restraint group.

The main finding was that mechanical restraint was associated with an approximately twofold increased risk of venous thromboembolism at both 30 and 90 days compared with chemical restraint. The cumulative incidence of VTE per 1000 patients at 90 days after restraint was 5.1 in the mechanical restraint group and 2.9 in the chemical restraint group.³ A useful comparator is a national thrombosis survey in England,¹ because both studies were based on routinely collected data and likely only captured clinically recognised VTE events. In the survey, the median hospital associated VTE rate for medical admissions was 3.0 per 1000 admissions, broadly comparable to the findings for chemical restraint and lower than for mechanical restraint.

To contextualise absolute VTE risk further, it is important to estimate the risk of VTE associated with admission to a psychiatric facility itself, before considering additional risk factors such as mechanical or chemical restraint. However, this baseline risk remains uncertain: the available evidence has been largely limited to single centre studies and heterogeneous follow-up periods and definitions of VTE.⁴ A single centre study in the UK that used linkage to primary care records to ascertain VTE events may provide the most appropriate comparator. In inpatients receiving psychiatric treatment, such a study estimated a VTE risk associated with admission of 1.5 per 1000 admissions.⁵ Although cross study comparisons should be interpreted with caution, these findings suggested that VTE risk after mechanical restraint,

and to a lesser extent after chemical restraint, may exceed baseline risk in these patients. Viuff and colleagues' study also used self-controlled case series analyses in the mechanical restraint group, which showed higher VTE incidence after mechanical restraint than during other admission periods within the same individuals.³ No equivalent analysis was performed for chemical restraint.

Mechanical and chemical restraint represent two of several potential risk factors for VTE specific to patients undergoing psychiatric treatment. Other risk factors include antipsychotic drug use, seclusion, physical restraint, catatonia, dementia, and poor oral intake.⁴ This variety of risk factors highlights the need for more robust estimates of baseline VTE risk for inpatients in psychiatric facilities, alongside improved risk stratification tools. Although the National Institute for Health and Care Excellence (NICE) recommends VTE risk assessment in this group,⁶ no validated tools exist for this population. Instruments developed for acutely ill medical inpatients (patients admitted with acute medical conditions rather than for surgery) have not been validated in psychiatric settings. Current practice is heterogeneous, with locally adapted tools that often use risk factors specific to patients in psychiatric facilities, including seclusion and restraint.^{2,7} Risk assessment and stratification also inform recommendations for thromboprophylaxis. Evidence for its efficacy for inpatients undergoing psychiatric treatment is, however, limited, and use is complicated by concerns about practicality and safety. These concerns include acceptability of parenteral low molecular weight heparin, prolonged hospital stays, bleeding risk in self-harm behaviour or restraint, and ligature risk associated with anti-embolism stockings.^{2,4}

In summary, Viuff and colleagues³ finding for hospital associated VTE risk after chemical restraint is broadly comparable to that seen in medical inpatients, whereas risk after mechanical restraint appears higher. Both forms of restraint may increase VTE risk above baseline levels for inpatients receiving psychiatric treatment, although the evidence is stronger for mechanical restraint. Given these potential harms and the continued uncertainty around VTE risk assessment and prevention in this patient group, it seems imperative to reduce the use of a key modifiable risk factor such as mechanical restraint. Although now rare in the UK, internationally up to half of inpatients receiving psychiatric treatment may experience mechanical restraint. While intended as a last resort safety measure, the benefits of restraint are difficult to weigh

against its harms, because high quality evidence demonstrating positive clinical outcomes is lacking.⁸ However, strategies to reduce or replace mechanical restraint also require further evaluation,^{8,9} including their potential to shift risk towards chemical restraint and the associated VTE risk. More broadly, better characterisation of baseline VTE risk for inpatients undergoing psychiatric treatment is needed to inform tailored prevention strategies, including thromboprophylaxis and the management of behavioural disturbance.

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