

Deciding on a safe site for intramuscular injections in an acute mental health setting

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Abstract

THE RISKS and benefits of different intramuscular injection (IMI) sites are still debated in the acute mental health literature. Although a few primary studies have investigated the issue of the safe site for intramuscular injections, the evidence remains varied and sometimes contradictory. This research brief reports on a systematic review that determined whether accessing the dorsogluteal (DG) intramuscular site is safer in an inpatient acute mental health setting where there is the potential for violence and agitation, as well as during personal restraint. The overall goal of this article is to provide practical guidance for health-care providers to help ensure the safe and effective administration of intramuscular injections in acute inpatient mental health settings.

Background

Implementing best practice standards is crucial for promoting patient safety and providing culturally safe treatment in mental health care. Te Whatu Ora New Zealand uses Lippincott to guide clinical decision-making. When choosing an intramuscular injection site, several factors must be considered, including the patient's physical condition, as highlighted by Cocoman and Murray (2010). However, selecting an appropriate site is a contentious issue, with the traditional dorso-gluteal site being the primary option for intramuscular injections in mental health care, as reported in Reynolds & Saxton (2015).

Despite the widespread use of the dorsogluteal site, concerns have been raised about potential damage to the sciatic nerve and major blood vessels, as noted by Nettina (2018). This has led to suggestions to adopt the ventrogluteal (VG) intramuscular injection site, which is purportedly safer. However, Greenway (2014) reports that nurses in clinical practice have been reluctant to use the ventrogluteal site and continue to use the dorsogluteal site. Nurses have raised concerns about the precise landmarking of

the ventrogluteal site and the risk of needle-stick injuries from the V-finger approach, as identified by Wynaden et al (2015).

The administration of an intramuscular injection to a non-adherent or aggressive client in the mental health environment can elicit an unexpected or impulsive response, as Brown et al (2015) noted. Consequently, other authorities have disputed the safety of the ventrogluteal site, particularly when personal restraint is used, and advocate for the consideration of trauma-informed care. To maintain a safe environment for the client without inducing further anxiety or stress, it is critical to adopt a consistent approach to trauma-informed care and meet the seclusion reduction target set by the Health Quality & Safety Commission (2022).

Non-adherence remains problematic, necessitating consideration of what the client prefers for the administration site. Amid the ongoing debate, a few studies have reported on the relative safety of these sites, with some findings contradicting each other. This review aims to synthesise the best evidence to support the delivery of best practice intramuscular injections in New Zealand mental health settings, to address the ongoing challenges faced by health-care professionals in this area.

Methodology and methods

This was a realist review that took an interpretive theory-driven approach, integrating evidence from quantitative, qualitative and mixed-methods research (Papoutsis et al, 2017). Realist reviews often refer to the "philosophy of science informing research" (Kirst & O'Campo, 2014, p. 105), and seek to determine an explanation while not adhering to a strict hierarchy of evidence (Kirst & O'Campo, 2014, p. 107). Realist review focuses on understanding how and why a procedure works and refining theory underpinning practice. This review sought to determine whether the dorsogluteal intramuscular injection site is safer to access in an acute mental health setting, where there is an increase in risk and considering client preference and trauma-informed care, versus the ventrogluteal site preferred by nurses (Nettina, 2018). The ability to provide findings that explain how and why context can affect outcomes is a strength of the realist approach. In taking this approach, the question we ask is: what is identified as best practice when choosing an intramuscular injection site for medication administration in a mental health setting where personal restraint may be needed?

Database search

The initial search terms used were 'dorsogluteal' and 'ventrogluteal' and 'intramuscular injection sites' and limited by 'mental health'. I accessed a number of relevant articles of interest by using 'Dorsogluteal intramuscular injection site' which appeared to focus on the comparison of the two sites (dorsogluteal and ventrogluteal) and some which were specific to mental health. The databases searched include CINAHL, found in EBSCO host, Science Direct, JBI, ClinicalKey and grey literature. References of the studies found were also explored and manual searches done for further articles.

Data screening

Studies from databases and grey literature were imported into Endnote and duplicates removed. Title, abstract and full-text screening were undertaken by HW and cross-checked by IA, the academic

Table 1. Context-mechanism-outcome

CMOc#	Context of intervention (study)	Strategy (preferred IMI site based on evidence)	Mechanism (rationale for the preferred site)	Outcome (clinician preference)	IMI site (study findings)
Strohfus et al, 2017	Needle length consideration for gender/BMI	Use of VG as preferred site	Use of critical assessments including weight, BMI, gender, site, needle length, the volume of medication	59% confident with VG, 41% do not use VG/not confident	VG preferred site
Wynaden et al 2015 Arslan & Ozden 2018 Walsh & Brophy, 2010 Fekonja et al, 2021	Current practice (IMI site preference)	Use of VG as preferred site	Clinicians consider client preference, safety and risk	Majority of nurses use the DG despite the evidence to support VG	VG preferred site
Mishra & Stringer, 2010	Injury based on IMI site (sciatic)	Use of VG as preferred site	Risk of sciatic nerve damage with use of DG site	Only 9% of NZ nurses use the VG	VG preferred site
Coskun et al, 2016 Larkin et al, 2017 Kaya et al, 2015 Elgellaie et al, 2018 Larkin et al, 2018 Tuğrul et al, 2020 Zaybak et al, 2007	Gender/BMI/muscle thickness consideration	No significant differentiation between DG and VG muscle thickness	Clinicians should base their site selection and needle size choices following assessment of gender/BMI	Site selection should include assessment of BMI, and considerations of gender and needle length	If best practice guidelines are followed, both DG/VG can be used

adviser for this project. The articles chosen for the review were identified by the reviewer’s judgment on how they related to the discussion topic for synthesis.

Data extraction

A pre-tested data extraction form was used to retrieve information on study characteristics. Details extracted was guided by the context, site of injection, outcome in terms of safety and undesired effects.

Synthesis of findings

The data were synthesised to determine which intramuscular injection site was safer to use in a mental health setting while maintaining the safety of both the clinician and the client and also considering client choice and trauma-informed care.

Context-mechanism-outcome configurations (CMOCs)

As a means to determine the safest intramuscular injection site for a mental health setting, context-mechanism-outcome configurations (CMOCs) were identified, based on the studies included in the review. Each study focused on preferred intramuscular injection sites, while some also went on to discuss safety, needle length and body mass index (BMI) to determine successful intramuscular injection administration. Each CMOC was identified based on evidence-based practice, best practice guidelines underpinned by anatomy of the intramuscular injection site, gender, safety and current practice. The rigor and relevance of the studies were paramount in the research findings and discussion. Table 1 (above) identifies four CMOCs from 13 of the studies.

Ethical/cultural considerations

The studies included in this review received appropriate ethical approval. As secondary research, this review did not require ethical approval. The included studies were considered for their rigour and usefulness in informing a realist synthesis focussed on safe intramuscular injection administration in a mental health setting.

Findings

This review sought to find out whether the dorsogluteal intramuscular injection site was safer to access in an acute mental health setting than the ventrogluteal site where there is a degree of risk and during personal restraint. The data reviewed in this paper identified the ventrogluteal site as the preferred site based on evidence-based practice. However, a number of studies also allude to the safe use of the dorsogluteal site when best practice is maintained in a mental health setting to reduce risk.

The findings of this review highlight nurses’ preference for using the dorsogluteal site for intramuscular injection administration despite evidence-based practice recommending the ventrogluteal site as the safest option. Ideally, when administering medication by intramuscular injection, nurses should opt for the site preferred in the guidelines and procedures. However, there are circumstances where safety is a concern and other factors need to be taken into account, including where clients are being treated under the Mental Health Act. In situations where risk is minimal and the client is amenable, then best practice would be to use the ventrogluteal site as evidence-based

practice has identified it as the preferred site. This eliminates any risk of potential damage to the sciatic nerve and surrounding blood vessels and has a greater chance of the medication being administered to the muscle tissue. In an acute mental health setting, risk can be increased exponentially, and care should be taken to ensure safe practice in terms of trauma-informed care and client preference.

Sciatic nerve injury complications are preventable by avoiding the dorsogluteal site. However, if using this site is essential, it is crucial to use best practice guidelines for landmarking (Kim & Park, 2014). When choosing an intramuscular injection site, the manufacturer's recommendations should also be considered, as well as the clinician's assessment of the client.

Discussion

This review aimed to identify which intramuscular injection site (ventrogluteal/dorsogluteal) is the safest to use in a mental health setting, taking account of evidence-based practice and circumstances which could include risk, client preference and trauma-informed care. This review showed that evidence-based practice backs the use of the ventrogluteal site to avoid sciatic nerve injury and potential damage to major blood vessels. The CMOs highlighted that in some situations the dorsogluteal is preferred when considering risk, and when best practice is maintained with land-marking.

Best practice guidelines are significant as they protect nursing practice and guide critical thinking to identify issues. Evidence-based practice is the integration of researched evidence into clinical practice and is the underpinning of safe and effective nursing care. While using best practice to guide nursing care, it is equally important to use critical thinking in situations where safety may be an issue. Considering clients' preferences for how a treatment is performed, and taking regard of trauma-informed care, can enhance client adherence and recovery.

Despite the evidence to support the best practice of the ventrogluteal site over the dorsogluteal site, nurses in clinical practice are reluctant to use it (Greenway, 2014) and continue to rely on the dorsogluteal site (Small, 2004). In a review conducted by Cocoman and Murray (2008), the evidence on the administration of psychotropic medications via intramuscular injection suggests that nurses tend to rely on known practices that are common in clinical areas, and are reluctant to change. This is supported by Wynaden et al (2015), who said nurses may be averse to changing to the ventrogluteal due to the difficulty in landmarking the site accurately and the potential of sustaining a needle-stick injury while using the V-finger method. This is especially the case when administering an intramuscular injection to a non-adherent/aggressive client in the mental health setting (Brown et al, 2015).

Conclusion

The safe landmarking of the dorsogluteal site should be researched further, considering the lack of evidence of actual sciatic nerve injury and the high percentages of nurses, internationally, who report greater confidence in the use of this site.

Although the ventrogluteal is the preferred site for intramuscular injection of medication in a medical setting, there is a need for guidelines to support the use of the dorsogluteal in an acute mental health setting. This would help support client choice, and thus promote adherence, trauma-informed care and safety.

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