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# An Analysis of the Effects of the Ritualistic Practice of Two-Hourly Turning

This paper compares older research supporting the traditional practice of frequent repositioning with newer research which presents an argument against two-hourly turning intervals, and stresses the importance of providing residents with alternating-pressure air mattresses as an alternative option. The paper discusses the connections between such frequent turning with issues such as sleep disruption, problematic behaviors, restraint of patients, and thus, increased- rather than reduced- occurrence of pressure ulcers. With research showing that the traditional method of two-hourly turning can be ineffective and unethical, it is essential for healthcare professionals to improve standards of care and consider updated options for pressure ulcer prevention. This paper examines the benefits of providing residents with improved support surfaces, such as alternating-pressure air mattresses, and considering less frequent turning schedules.

## Main Body

Human nature leads us to cling to tradition and familiar practice, and show hesitancy when new evidence suggests it may be time for progress. Healthcare institutions and professionals are certainly not exempt from this human tendency. For decades, the standard protocol for preventing pressure ulcers in patients has been mandatory repositioning, or turning, every two hours, twenty four hours a day (Sharp, Schulz Moore, & McLaws, 2018). While this standard of care is rooted in positive intentions and a desire to protect patients from pressure ulcers, recent research has challenged both the effectiveness and ethics of such frequent turning. When outdated practices continue to be used in healthcare facilities, patients' health and wellbeing is put at risk. As research and technology continue to progress, it can be argued that healthcare professionals have a duty to keep up to date with findings and try to implement improved standards of care wherever possible. With new research suggesting that turning patients every two hours is unethical and sometimes ineffective, it is important to explore other options, such as less frequent turning schedules in combination with improved support surfaces (Sharp, Schulz Moore, & McLaws, 2018; Defloor, Bacquer, & Grypdonck, 2005).

The primary challenge faced when discussing how to best prevent pressure ulcers is the lack of consistent, evidence-based research to base policies upon. Many researchers and healthcare professionals acknowledge that the "science underpinning pressure ulcer prevention and treatment is in its infancy," (Black, 2015). While it is commonly accepted that pressure ulcers are detrimental to patients, there are clear inconsistencies related to how healthcare facilities should prevent and handle pressure ulcers, which likely stems from a lack of consensus among researchers. According to Joyce Black, PhD, RN, "practices vary greatly," and "Evidence is scarce in the science of pressure ulcers," (2015). There is a limited amount of research that encompasses the topics of pressure ulcers, repositioning frequencies, and support surfaces. For example, when a PubMed search was conducted, using the keywords, "pressure ulcer(s)" or "pressure sore(s)", combined with "turning" and "repositioning", researchers found that the search only produced 65 sources, and only one of these discussed frequency of turning patients (Defloor, Bacquer, & Grypdonck, 2005). More specifically, there are questions about lack of

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credibility of research upon which the two-hourly turning regiment originates from. This practice of turning patients every two hours has been traced back to the notes of Florence Nightingale (anecdotal, not research based) and to animal studies from the mid 1900's which have been dismissed as unreliable. This information is summarized by researchers who conducted the older literature search which explained that "No scientific support could be found to explain why two-hourly turning is optimal... to prevent pressure ulcer development," (Hagisawa & Ferguson-Pell, 2008). Additionally, the credibility of another study which has contributed to the current norm of two-hourly turning has been questioned. Kosiak, a researcher who studied tissue pressure in healthy volunteers, "is credited for recommending turning the patient every two hours," (Krapfl & Gray, 2008). However, later analysis of his work has shown that he based his recommendation on tradition, rather than sourcing it from his actual research. Clearly, the research surrounding pressure ulcers and repositioning is inconsistent, and generally, based upon traditional practices, rather than strong evidence. With this in mind, it is understandable that healthcare facilities' practices vary greatly, and may not be the most effective.

In order to discuss the most effective method to prevent pressure ulcers, it is important to have an understanding of pressure ulcers, or decubitus ulcers, in general. Pressure ulcers have been defined as "localized injury to the skin and/or underlying tissue...as a result of pressure," (Chou et. al, 2013). According to Chou et. al, pressure ulcers (PU's) contribute to reduced quality of life and increased needs for care/treatment (2013). Not only do pressure ulcers have a negative physical impact (i.e., pain, discomfort, inflammation, infection, etc.), they often burden other aspects of patients' lives, such as leading to "negative psychological...and social consequences affecting health, well-being, and health-related quality of life," (Gorecki et. al., 2009). This reinforces the need for solid research and improved solutions that reduce pressure, but also ensure that the rights and wellbeing of residents are preserved. While pressure ulcers can occur in a wide range of patient populations, this issue is especially relevant amongst elderly patients/residents, and in institutional settings. According to a recent study, pressure ulcers occur in anywhere from "10% to 50% in nursing homes," (Clarysse, Kivlahan, Beyer, & Gutermuth, 2018). Common reasons that institutionalized elders suffer from pressure ulcers include lacking access to necessary pressure-relief devices and insufficient repositioning. In one cross-sectional study in Sweden, which examined 2 hospitals and 825 patients, it was discovered that "only 44-47% of patients at risk for developing pressure ulcers received pressure-reducing mattresses and planned repositioning," (Sving, Idvall, Hogberg, & Gunningberg, 2014). This illustrates that in addition to insufficient and inconsistent research, there is an issue related to implementation of prevention in healthcare settings. If patients have been assessed and determined to be at risk for pressure ulcers, even if research is not consistent, prevention methods should still be in place. As with many other health issues, preventing the occurrence of pressure ulcers is far superior to managing treatment when they do occur (Jaul, 2010). Yet, there remains a gap related to what combination of turning regiment and type of support surface is most effective, and allows residents the highest quality of life. These uncertainties contribute to the hesitancy of healthcare professionals to turn away from traditional norms which may be harmful or inefficient, and move towards improved practices.

With the knowledge that immobility is the predominant cause of PU's (Jaul, 2010), it seems logical that repositioning would be a positive intervention, as "regular position changes reduce...time during which the tissue is under pressure," (Defloor, Bacquer, & Grypdonck, 2005). At the same time, it is important to question the reliance on the traditional regiment of turning patients every two hours, twenty-four hours a day. This preventative measure must be examined to see if it is effective, if the current regiment is best, and if such frequent turning is

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ethical in regards to wellbeing of residents (i.e., sleep disruption related to waking residents to reposition throughout the night). These research gaps and the inconsistencies of expert recommendations leave many healthcare professionals unsure of how to handle pressure ulcer prevention. For example, the Agency for Healthcare Policy and Research recommends turning every two hours, while the Dutch consensus guideline extends the interval to three hours, and the European Pressure Ulcer Advisory does not even offer an interval (Defloor, Bacquer, & Grypdonck, 2005). Additionally, recommendations from The National Pressure Ulcer Advisory Panel (NPUAP) only offer vague guidelines. The Quick Reference Guide provided by the NPUAP directs healthcare professionals to “Consider the pressure redistribution surface when determining the frequency of repositioning” (Haeslar, 2015), but fails to clarify which pressure redistribution surface may allow for a less frequent turning interval, or what these reduced frequencies could look like (i.e., three hours, four hours, five hours, etc.). This guideline acknowledges that frequency of turning may be flexible, and may depend on support surfaces, but leaves these decisions up to individual clinicians, rather than offering any specific, evidence-based recommendations. When evaluating the harms associated with two-hourly turning (evidence that challenges its’ efficacy, burden on staff/facilities, and possible detriment to the wellbeing of residents), it becomes clear that a better solution is needed. Several studies have focused on the idea of less frequent turning routines. One group of researchers introduces a combination of four-hourly turning and pressure-reducing mattresses, which “decreased the number of pressure ulcer lesions significantly...from 14.3% to 3.0%,” (Defloor, Bacquer, & Grypdonck, 2005). They also explained how this change in practice would lessen the suffering of residents (i.e., being woken to be turned) and would save money and effort. Additionally, Krapfl and Gray (nursing professionals involved with wound/ostomy and urology) made note of evidence that discussed how “repositioning every four hours, when combined with an appropriate pressure redistribution surface, is just as effective,” (2008). While these sources do not clarify what specific support surface should be combined with the suggested four hourly regiment, they do offer a starting point for an improved method of PU prevention, in regards to repositioning and support surfaces.

To further an understanding of why two-hourly repositioning as PU prevention can be problematic, specifically for residents, it is important to shift focus towards the topic of sleep. Experts acknowledge that some changes occur normally with age, such as waking up earlier, challenges falling asleep, and difficulties sleeping deeply. However, they state that “disrupted sleep and excessive daytime sleepiness should not be accepted as an inevitable aspect of aging,” (Cole & Richards, 2007). Unfortunately, sleep disruption is a challenge that most institutionalized elders face. While residents may sometimes find their sleep interrupted by procedures such as x-rays and lab work, the primary culprit is the two hourly turning regiment, which is usually accompanied by changing of briefs/toileting. While it is important to make sure residents are clean, comfortable, and are relieved from pressure, evidence has demonstrated several concerning effects of waking residents so frequently. For instance, research that specifically studied the relationship between sleep and behavior of residents found that “Agitation is significantly related to the sleep disturbances of nursing home residents,” (Cohen-Mansfield & Marx, 1990). The researchers discovered that waking residents throughout the night was “significantly related to a greater number of aggressive behaviors,” (Cohen-Mansfield & Marx, 1990). These concerning behaviors are not only frustrating for residents, but for staff as well. Researchers discuss the burden that agitation and aggressive behaviors have on caregivers, and say to “reevaluate and discontinue (if possible) the practice of awakening residents throughout the night,” (Cohen-Mansfield & Marx, 1990). However, this solution could be problematic, considering caregivers often wake residents not only to reposition them, but

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also for toileting/incontinence issues. Arguably, it would be unethical to refrain from cleaning and changing an incontinent resident, which would expose them to moisture, skin breakdown, and possible infection, just to keep from waking them. Researchers have also reported other issues related to repositioning residents every two hours, all day and all night. For example, they found that residents who were turned this frequently, and as a result had interruptions of their sleep every two hours, were “uncooperative...very sleepy...too tired to join in activities...refusing food...asleep at the table,” (Sharp, Schulz Moore, & McLaws, 2018). Clearly, residents seemed to be experiencing sleep deprivation which negatively impacted their activities of daily living, and could benefit from longer periods of uninterrupted sleep. At the same time, the recommendation which suggested allowing residents to sleep throughout the night without turning or changing at all, could harm residents in other ways. A more practical solution was suggested by researchers, which recommended a 4 hour turning regiment, instead of the traditional two hour regiment, which would be “less labour-intensive” and would mean that the “patient’s night rest is disturbed less,” (Defloor, Bacquer, & Grypdonck, 2005).

Sleep deprivation (caused by waking residents to reposition) is highly linked to agitation and concerning behaviors, which unfortunately, can often lead to restraint. Researchers have demonstrated how the “ritualistic practice of waking residents every two hours for the purpose of repositioning contributes to severe sleep deprivation and behaviours of concern,” (Sharp, Schulz Moore, & McLaws, 2018). It seems clear that sleep deprivation and exhaustion would contribute to residents becoming less mobile and active. At the same time, concerning behaviours can also lead to reduced mobility, because many nursing homes utilize chemical and/or physical restraints in order to manage these behaviors. Restraining residents becomes problematic because, according to research from 2010, restraints (physical and/or chemical) can “cause motor or sensory impairment...sleepiness and loss of awareness,” and “may lead to motor limitations, resulting in...breakdown of the skin,” (Jaul, 2010). Recent research has supported this assertion, concluding that “physical or chemical restraints of residents have been associated with PU development” and agreed that restraints can be dangerous because they are “correlated with the residents’ inability to move to relieve pressure,” (Sharp, Schulz Moore, & McLaws, 2018). As you can see, repositioning every two hours (a practice intended to prevent pressure ulcers) can act as a catalyst for this chain of events which may ultimately lead back to increased risk for pressure ulcers.

When reviewing pressure ulcer prevention practices, the topics of repositioning and support surfaces go hand in hand. Support surfaces are defined as “devices designed to redistribute pressure and include mattresses and related equipment,” (Chou et. al, 2013). As new technologies develop, more options are available for relieving pressure, beyond such a heavy reliance on frequent, manual repositioning. One concern related to turning patients every two hours, twenty four hours per day, other than interrupting the sleep of residents, is that residents, especially those with injuries or pre-existing discomfort, “may suffer pain and distress during manual repositioning,” (Scharp, Schulz Moore, & McLaws, 2018). If frequent manual repositioning is linked to sleep deprivation, concerning behaviors, and pain, it seems more ethical to look towards support surfaces, which could be combined with less frequent repositioning, reducing these negative effects. At the same time, it is essential to consider which support surface is being used. Evidence has demonstrated the superiority of pressure reducing mattresses, and experts warn against standard (non-pressure reducing) mattresses, which offer support to only “10-20% of the body,” (Defloor, Bacquer, & Grypdonck, 2005). Mattresses that reduce pressure are crucial, because they lower the risk for PU’s, and according to experts, also mean that caregivers can “turn patients less frequent than is usually recommended,”

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(Defloor, Bacquer, & Grypdonck, 2005). This idea is transformative for elder care, because the use of adequate support surfaces, combined with less frequent manual repositioning, would allow for better sleep quality and thus, would likely reduce sleep deprivation, concerning behaviors, restraint, immobility, and further pressure ulcers. Active, or dynamic support surfaces are unique because they redistribute and relieve pressure, and are considered to be “superior to the standard surface,” (Jaul, 2010). One type of active support surface is the alternating pressure air mattress (APAM), which has air cells that inflate and deflate in a cycle, which helps to redistribute pressure to alternating parts of the body on a timer system (Chou et. al., 2013). These alternating-air surfaces are significant because they keep residents in a cycle of movement and pressure relief, but the movement does not present a disturbance to the resident in the same way that being woken for manual repositioning would. Researchers have recommended that residents be provided with APAM’s as a method of pressure relief and pressure ulcer prevention, and explain the value in the fact that these support surfaces offer “pressure relief to all parts of the body every few minutes throughout the twenty-four hours without waking residents,” (Sharp, Schulz Moore, & McLaws, 2018). Pressure redistribution every several minutes without disturbing the rest of a resident certainly seems preferable over disturbing a resident to manually reposition them every two hours, even throughout their nighttime sleep. However, some people are critical of the recommendation to provide APAM’s to residents as a preventative measure, due to concerns about the financial burden that this might have on facilities. While some healthcare professionals believe that APAM’s should be provided to all residents in order to prevent PU’s, others view this as being too costly of an undertaking. For example, the American College of Physicians does not recommend these expensive support surfaces for prevention, and international guidelines only recommend “that very-high-risk patients who cannot be moved be placed on active support surfaces, such as alternating air,” (Black, 2015). Additionally, some experts recommend a “stepped care approach” that would use “less expensive dynamic support surfaces before switching to more expensive alternatives,” (Chou et. al., 2013). However, other experts acknowledge that providing pressure ulcer prevention surfaces would present an initial expense, but argue that the cost to treat pressure ulcers would be much higher in the long run (Sharp, Schulz Moore, & McLaws, 2018). More specifically, a recent study revealed that APAM’s are more cost-effective than standard, foam mattresses when trying to prevent pressure ulcers in residents (Sharp, Schulz Moore, & McLaws, 2018). Another issue related to costs of advanced support surfaces is that patients often cannot receive “reimbursement for the use of an advanced support surface....once the ulcer shows signs of healing,” (Black, 2015). In other words, the system does not financially support the use of advanced support surfaces as prevention, and only reimburses patients when the pressure ulcer is already present and severe. Perhaps, it would be more beneficial (both financially and for the health of residents), to provide advanced support surfaces as a preventative measure, rather than once pressure ulcers have already developed and are causing both financial burden and pain for the resident.

Clearly, the discussion surrounding pressure ulcer prevention practices is complex, and much research needs to be done before an improved practice can be decided on and implemented. Meanwhile, healthcare professionals are left in a challenging position as they try to remain ethical, ensure residents are cared for, and avoid being accused of elder abuse or neglect. The World Health Organization defines elder abuse as an “act, or lack of appropriate action...where there is an expectation of trust,” (Clarysse, Kivlahan, Beyer & Gutermuth, 2018) and explains that elder abuse can present in the form of neglect as well (whether intentional or unintentional). This definition could provide a basis for less frequent repositioning being portrayed as neglectful. On the other hand, The Australian Law Reform Commission defines institutional

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abuse as caused by “routines, systems, and regimes of an institution...which...restricts dignity, privacy, choice, independence, or fulfillment of individuals,” (Sharp, Schulz Moore, & McLaws, 2018). This definition could support why the arguably outdated two hour turning regiment, which has been shown to have harmful effects on residents, could be considered abuse of institutionalized elders. On one hand, it is clear that failing to provide adequate pressure ulcer prevention is neglectful, but the gray area lies in what the best prevention methods truly are. Currently, healthcare staff risk being held responsible for pressure ulcers that may occur if they are not adhering to the traditional two hour turning regiment (Clarysse, Kivlahan, Beyer, & Gutermuth, 2018). At the same time, new evidence which presents this practice as inefficient and detrimental, asserts that continuing to implement a two hourly turning routine could be classified as unintentional elder abuse. The researchers that claimed two hourly turning could be defined as abuse did clarify that nurses and care staff should not be held liable when they must follow their facility’s policy, and often “lack the authority to procure pressure relieving equipment such as APAMS,” (Sharp, Schulz Moore, & McLaws, 2018). Nonetheless, healthcare professionals are placed into a difficult position where they are expected to implement practices that do not burden a resident too much (i.e., waking to reposition, linked to sleep deprivation and agitation), but also to ensure residents are not left without adequate pressure relief (with repositioning every two hours still being the accepted method for achieving this).

In summary, determining and implementing an effective, ethical, and evidence-based pressure ulcer prevention plan for institutionalized elders has clearly been a complex and challenging process, which is nowhere near completion. There is a strong need for further research to be conducted, which studies all of these variables discussed at the same time. Currently, research seems to suggest that the practice of turning residents every two hours is rooted in tradition and expert opinion, rather than being based upon solid evidence. Additionally, there is cause for concern when other research seems to portray a ‘domino effect’ where turning residents every two hours, through day and night, can lead to other issues such as sleep deprivation, negative behaviors, and restraint, and even back to increased risk for pressure ulcers. Even though the suggestion to end the practice of repositioning elders in order to preserve their sleep and reduce concerning behaviors may be rooted in positive intentions, this suggestion is too extreme, and could lead to higher risk for pressure ulcers. Disciplining healthcare staff for following the traditional two hourly turning practice under the definition that this regimen is abusive may be too extreme as well. A solution- the combination of a less frequent turning schedule (i.e. four hourly) with alternating pressure air mattresses- offers a ‘happy medium’ and has the potential to prevent pressure ulcers, increase well being of residents, and reduce burden and blame on healthcare staff. Above all, it is essential that the health and wellbeing of elderly residents, “one of the most vulnerable groups” (Clarysse, Kivlahan, Beyer, & Gutermuth, 2018), is protected. Hopefully, researchers and healthcare professionals realize the importance of not only protecting our growing elderly population, but doing so in an evidence-based manner. In regards to the debate surrounding the pressure ulcer prevention methods, the solution can only be found in further research. Clearly, much more reliable, comprehensive research is needed in order for consensus to be reached, but the possible solution of four hourly turning combined with APAM’s offers a solid starting point.