Recommendation 2.0 Evidence Profile

Recommendation question 2.0: Should a specific repositioning frequency be recommended over another frequency for persons with pressure injuries or those at risk of developing them?

Recommendation 2.0: The expert panel suggests that nurses and health providers reposition persons at risk of pressure injuries every 2-4 hours.

Population: Persons with or at risk of developing pressure injuries (PI)
Intervention: One repositioning frequency
Comparison: Any other repositioning frequency
Outcomes: Pressure injury incidence (stages 1 to 4) [critical], pressure injury precursor signs and symptoms [critical], worsening of pressure injury [critical] (not measured), pressure injury healing rate [critical] (not measured), Person/caregiver satisfaction [critical] (not measured)
Setting: All health-care settings, including but not limited to: community care, outpatient care, and acute care.

Bibliography : 440, 8, 503

Quality assessment							No. of Participants		Effects	Certainty	Reference
№ of studies	**Study design**	**Risk of bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Publication bias**	**Intervention**	**Control**			
Pressure injury incidence											
Comparison: 2-hourly repositioning compared to 4-hourly repositioning (on any support surface) (Short-term follow-up, 4 weeks or less)											
3[a]	SR = 3 RCTs	Serious[b]	Not serious	Not serious	Serious[c]	Undetected	Total Participants : n=1074 (3 RCTs) n=549 q 2-hourly repositioning	n=525 q 4-hourly repositioning	RR was 1.06 (95% CI 0.80-1.41) 2-hourly repositioning compared with 4- hourly repositioning used in conjunction with any support surface may result in little to no difference in the incidence of pressure injury. There are no more or less pressure injury per 100 people who receive two-hourly repositioning compared to four-hourly repositioning (ranges from 3 less to 3 more).	⨁⨁◯◯ Low	440 : Gillespie et al., 2020
Comparison : 2-hourly repositioning compared to 3-hourly repositioning											

1[d]	SR = 2 RCTs	Serious[e]	Not Serious	Not serious	Serious[f]	Undetected	n = 273 q 2- hourly repositioning	n = 267 q 3 - hourly repositioning	There were no clear differences in the risk of PI for 2-hourly versus 3-hourly repositioning frequencies in either study. RR 4.06, 0.87 to 18.98 RR 0.90, 95% CI 0.69 to 1.16	⊕◯◯◯ Very Low	440 : Gillespie et al., 2020
Comparison: 3-hourly compared to 4-hourly repositioning (all participants nursed on high-density foam mattress)											
1[g]	1 RCT from SR	Serious[h]	Not Serious	Not serious	Serious[i]	Undetected	q3h Total Participants n = 407 n = 209	q4h n = 198	RR 0.20, 95% CI 0.04 to 0.92 There may be a reduction in PI incidence with 3-hourly compared with 4- hourly repositioning.	⊕⊕◯◯ Low	440 : Gillespie et al., 2020
Comparison: 4-hourly repositioning compared to 6-hourly repositioning											
1[j]	1 RCT from SR	Very Serious[k]	Not Serious	Not Serious	Very Serious[l]	Undetected	q4h Total Participants n = 129 n = 66	q6h n = 63	RR 0.73, 95% CI 0.53 to 1.02 There was a reported 27% reduction associated with 4-hourly repositioning compared to 6-hourly repositioning.	⊕◯◯◯ Very Low	440 : Gillespie et al., 2020
Comparison: Incidence of pressure injury using repositioning intervals (2-, 3-, or 4-hour) over 4 weeks											
1	RCT	Very Serious[m]	Not Serious	Not Serious	Very Serious[n]	Undetected	Total Participants n = 988 **<u>Repositioning</u>** 2-hourly n = 319 PI Incidence = 0.0%	 **<u>Repositioning</u>** 3-hourly n: 320 4-hourly n = 349 PI Incidence = 0.0%	The PI incidence during the intervention was 0.0% in all arms. Note: baseline risk across groups (12 months before intervention) was 5.24%	⊕◯◯◯ Very Low	8: Yap et al., 2022

Comparison: 3-hourly to 5-hourly, comparing a 6-month period of each repositioning											
1	Non-Randomized study Pre–post intervention evaluation study	Very Serious[o]	Not Serious	Not Serious	Serious[p]	Undetected	Participants : n = 1165 PI events : n=23 (2%) 3-hourly repositioning	Participants : n = 1094 PI events : n=38 (3.5%) 5-hourly repositioning	OR, 0.51; 95% CI, 0.27–0.97 The intervention group had a slightly lower percentage of PIs compared to the pre-intervention. For every 100 people who receive intervention, 1 less people will have pressure injury (ranges from 2 less to no more or less).	⨁◯◯◯ Very Low	503: Darvall et al., 2018
Pressure injury precursor signs and symptoms using repositioning intervals (measured as stage I pressure injury incidence)											
Comparison: 3-hourly to 5-hourly, comparing a 6-month period of each repositioning											
1	Non-Randomized study Pre–post intervention evaluation study	Very Serious[q]	Not Serious	Not Serious	Serious[r]	Undetected	Participants : n = 1165 n = 28 Stage 1 PIs : n=8 (28.6%) 3-hourly repositioning	Participants : n = 1094 n =53 Stage 1 PIs : n=19 (35.8%) 5-hourly repositioning	RR 0.40; 95% CI; 0.17-0.90 Precursor signs and symptoms were slightly lower in the post-intervention group. For every 100 people who receive intervention, 1 less people will have pressure injury (ranges from 2 less to no more or less).	⨁◯◯◯ Very Low	503: Darvall et al., 2018
Worsening of pressure injury (not measured)											
N/A											
Pressure injury healing rate (not measured)											
N/A											

Person/caregiver satisfaction (not measured)
N/A

Additional table- Individual study details

Reference	Study Design	Country	Intervention Group Details	Control Group Details	Reported Effects/Outcomes	Risk of bias
Outcome: pressure injury incidence rate						
2-hourly repositioning compared to 4-hourly repositioning on all surfaces						
(Taken from review Gillespie et al., 2020) Bergstrom 2013; Defloor 2005; Manzano 2014	3 RCTs from SR	Belgium, Ireland, Wales	Total Participants : n=1074 (3 RCTs) n=549 q 2-hourly repositioning	 n=525 q 4-hourly repositioning	It is uncertain whether 2-hourly repositioning compared with 4-hourly repositioning used in conjunction with any support surface increases or decreases the incidence of pressure injury.	Systematic review: LOW Individual studies: Serious
2-hourly repositioning compared to 3-hourly. Repositioning on high-density foam mattresses in Bergstrom 2013, and repositioning on viscoelastic foam and standard institutional mattresses in Defloor 2005.						
(Taken from review Gillespie et al., 2020) Bergstrom 2013, Defloor 2005	2 RCTs from SR	USA, Canada, Belgium	n = 273 q 2- hourly repositioning	n = 267 q 3 - hourly repositioning	RR reported 4.06 (0.87 to 18.98) and 0.90 (0.69 to 1.16) There were no clear differences in the risk of PI between 2-hourly versus and 3-hourly repositioning.	Systematic review: LOW Individual studies: Serious
3-hourly compared to 4-hourly repositioning (all participants nursed on high-density foam mattress)						
(Taken from review Gillespie et al., 2020) Bergstrom 2013	RCT	USA, Canada	Participant: n=209 In the intervention group q 3-hourly repositioning compared to 4-hourly repositioning	Participants: n=198 Q 4 hourly repositioning	RR 0.20, 95% CI 0.04 to 0.92 There may be a reduction in PI incidence with 3-hourly compared with 4- hourly repositioning.	Systematic review: LOW Individual studies: Serious
4-hourly repositioning compared with those receiving 6-hourly repositioning						
(Taken from review Gillespie et al., 2020) Defloor 2005	RCT	Belgium	Participants: n=66 Q 4- hourly repositioning compared to q 6-hourly repositioning	Participants: n=63 Q 6-hourly repositioning	RR 0.73, 95% CI 0.53 to 1.02 There was a reported 27% reduction associated with 4-hourly repositioning	Systematic review: LOW Individual studies: Very Serious

Incidence of pressure injury using repositioning intervals (2-, 3-, or 4-hour) over 4 weeks						
Yap et al., 2022	RCT	USA	Total Participants: n = 988 **Repositioning** 3-hourly n= 320 4-hourly n= 349	**Repositioning** 2-hourly n= 319	The PI incidence during the intervention was 0.0% compared with 5.24% at baseline, even though intervention resident clinical risk scores were significantly higher (P < .001). A causal link was not established between repositioning interval treatments and PI outcome; however, no new PIs developed.	Very Serious
Repositioning intervals (5-hourly to 3-hourly), comparing a 6-month period of each repositioning						
Darvall et al., 2020	Non-Randomized study Pre–post intervention evaluation study	Australia	3-hourly repositioning Participants : n = 1165 PI events : n=23 (2%)	5-hourly repositioning Participants : n = 1094 PI events : n=38 (3.5%)	OR, 0.51; 95% CI, 0.27–0.97; P = 0.041 Thirty-eight (38) pre-intervention patients (3.5%) – 5-hourly repositioning - and 23 post-intervention patients (2.0%) – 3- hourly repositioning - developed a pressure injury.	Very Serious
Outcome: PI precursor signs and symptoms (measured as stage I PI incidence)						
Repositioning intervals (5-hourly to 3-hourly), comparing a 6-month period of each repositioning						
Darvall et al., 2020	Non-Randomized study Pre–post intervention evaluation study	Australia	Total Participants: n = 1165 Stage 1 PIs : n=8 (28.6%) 3-hourly repositioning	n = 1094 Stage 1 PIs : n=19 (35.8%) 5-hourly repositioning	RR 0.40; 95% CI; 0.17-0.90; P=0.027 19 pre-intervention patients - (35.8%)- 5-hourly repositioning - and 8 post-intervention patients (28.6%) – 3-hourly repositioning – developed a stage 1 pressure injury.	Very Serious

Secondary outcome was staff repositioning compliance fidelity **Note:** this is an additional outcome not prioritized by the panel but included for information purposes.

Yap et al., 2022	RCT	USA	Total Participants: n = 988 **Repositioning** 2-hourly n= 319 3-hourly n= 320 4-hourly n= 349	**Repositioning** 2-hourly n= 319	Daily on-time repositioning compliance was significantly better as the assigned hourly repositioning interval lengthened. 4-hour interval had significantly greater compliance (95%) compared with 3-hour (90%) or 2-hour (80%) intervals (P < .001). Daily average on-time repositioning compliance was lower across all Braden Scale risk categories for the 2-hour arm compared with 3- or 4-hour repositioning schedules (P < .001).	Serious

Acronyms
CI = Confidence interval
PI = Pressure Injury
RCT = Randomized controlled trial
RR = Relative Risk
SR = Systematic Review

Explanations:

[a] 3 RCTs were included from a systematic review (Gillespie et al., 2020).
[b] The SR was assessed as low risk of bias following the ROBIS tool. Review authors rated studies using the ROB 2.0 tool. Most studies had a serious risk of bias due to lack of blinding of participants and outcome assessors, we downgraded by 1.
[c] We downgraded imprecision by 1 as relative risk crosses 1.0; the true effect estimate may be positive, negative or no effect.
[d] RCTs were included from a systematic review (Gillespie et al., 2020).
[e] The SR was assessed as low risk of bias following the ROBIS tool. Review authors rated the study using ROB 2.0 tool. The studies had a serious risk of performance bias (lack of blinding of personnel), we downgraded by 1.
[f] Downgraded by 1 due to wide confidence intervals.
[g] RCT was included from a systematic review (Gillespie et al., 2020).
[h] The certainty of evidence is very low due to high risk of bias, downgraded risk of bias three times due to serious limitations in design.
[i] Downgraded by 1 due to differences in the results across the two studies.
[j] RCT was included from a systematic review (Gillespie et al., 2020).
[k] The SR was assessed as low risk of bias following the ROBIS tool. Review authors rated the study using ROB 2.0 tool. The study had a very serious risk due to risk of performance bias (lack of blinding of outcome assessors and personnel and missing outcome data), we downgraded by 2.
[l] Downgraded by 2 due to low number of events (n=129) and wide confidence intervals (which include the possibility of harm as well as benefit and no effect).
[m] Assessed using the Rob-2, there was high risk of bias in the study due to lack of randomization, effect of assignment to intervention, missing outcome data; we downgraded by 2.
[n] The number of events was very below the optimal size and we downgraded by 2.
[o] The study was assessed using the Robins-1 tool. For risk of bias there were deviations from intended outcomes, effect of assignment to intervention, measurement of outcomes; we downgraded risk of bias twice by 2.
[p] The number of events was very below the optimal size of 300 and we downgraded by 1.
[q] The study was assessed using the Robins-1 tool. For risk of bias there were deviations from intended outcomes, effect of assignment to intervention, measurement of outcomes; we downgraded risk of bias twice by 2.
[r] The number of events was very below the optimal size and we downgraded by 1.

References

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