

THE RELATIONSHIP BETWEEN IN-BED SLIDING AND SKIN SHEAR

Introduction

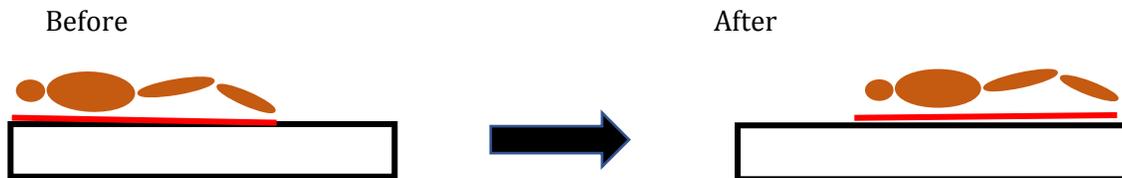
Skin shear is defined as an applied force or pressure exerted against the surface and layers of the skin as tissues slide in opposite but parallel planes.¹

More simply, skin shear happens when something slides on a patient's skin or a patient slides along something. Skin shear does not occur unless the surface and the patient's skin change position relative to each other.

Linen skin shear

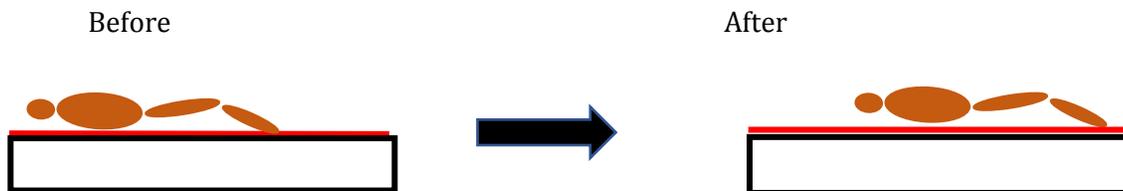
In **Drawing 1**, *no skin shear occurs* because the patient does not move relative to the linen (represented by the red line) directly under his/her body even though both the patient and the linen slide down the bed. The linen and patient move down the bed together.

Drawing 1: No Skin Shear



However, *skin shear does occur* in **Drawing 2** because the patient slides along the (red) linen. Here the patient moves while the linen stays in place.

Drawing 2: Skin Shear



Impact of inclining surface

Elevating or inclining a bed can prove not only more comfortable but also therapeutic, especially in respiratory and cardiopulmonary cases.² However, weight tends to move downhill. In addition, patients squirm to relieve pressure, which increases sliding by removing maximum friction contact between a patient and the surface on which he/she is lying. The greater the angle of incline, the more force (gravity) pulls the patient downhill.

Use this formula to determine the impact of the change in surface level: Force down an incline = Weight x Sine of the angle. **Drawing 3** shows the angle that is used in this calculation.

Drawing 3: Sine of angle for formula

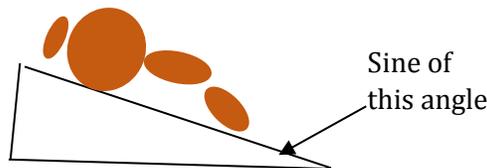


Chart 1 shows the percent of a 250-lb patient’s weight that would cause sliding down an incline of a given angle and what the force would be on that patient.

Chart 1: Sliding due to incline

Incline angle (in degrees)	Sine of angle	Force pulling down incline (in lbs) for 250-lb patient
0 (flat and level)	0	0
5	8.7	21.75
10	17.3	43.25
15	25.9	64.75
20	34.9	87.25
25	43.6	109.00
30	50	125.00

When weak patients slide down in bed, caregivers usually have to reposition them or move them back into a desired position. Repositioning can be difficult and strenuous, sometimes resulting in caregiver injuries³ if assistive devices, often referred to as safe patient handling equipment, are not used.

