Heinrich’s theory of domino sequence is updated by Frank Bird Jr. to explain the circumstances that lead to losses (injury) in the chronological order of five dominoes.

1. Lack of control - Management.
2. Basic causes - Origins.
3. Immediate causes - Symptoms.
4. Accident - Contact, and
5. Injury/damage - Loss.

Lack of control is the first domino and refers the fourth function of the management (planning, organizing, directing, controlling and coordinating). It involves accident investigation, facility inspection, job analysis, personal communication, selection and training, 'standards' in each work activity identified, measuring performance by standards and correcting performance by improving the existing programmes. This first domino may fall due to inadequate standards, programmes and follow up.

Basic Causes (origins) are (1) Personal factors lack of knowledge or skill, improper motivation and physical or mental problems and (2) Job factors inadequate work standards, design, maintenance, purchasing standards, abnormal usage etc. These basic causes are origin of substandard acts and
FRANK BIRD'S DOMINO THEORY

conditions and failure to identify them permits the second domino to fall, which initiates the possibility of further chain reaction.

Immediate causes are only symptoms of the underlying problem. They are substandard' practices or conditions (known I as unsafe acts and unsafe conditions) that could cause the fourth domino to fall. These causes should be identified, classified and removed by appropriate measures.

Accident or incident is the result of unsafe acts or/and unsafe conditions. This point is the contact stage. Some counter measures employed are deflection, dilution, reinforcement, surface modification, segregation, barricading, protection, absorption, shielding etc.

Injury includes traumatic injury, diseases and adverse mental neurological or systemic effects resulting from workplace exposures. 'Damage' includes all types of property damage including fire. The severity of losses involving physical harm and property damage can be minimized by prompt reparative action, salvage in the case of property damage and fire control devices and trained personnel.

Frank E Bird, in 1969, analyzed 1753498 accidents reported by 297 companies of America

Inference of this 1-10-30-600 ratio is that 630 no injury accidents, with 10 minor and 1 major (serious) injury accidents, provide a much larger basis for many opportunities to prevent any injury accident. Out of total 641 events, only 10 may result in minor injuries and only 1 in major injury. But this can happen at any time not necessarily at the end.