

005

ASSESSING CARDIOVASCULAR AEROMEDICAL RISK: BEYOND THE 1% RULE

L'ÉVALUATION DU RISQUE CARDIOVASCULAIRE AÉROMÉDICALE AU-DELA DE LA REGLE DE 1%

GW Gray

Canadian Forces, Toronto, Ontario, Canada

gary.gray@forces.gc.ca

Introduction: The notion of formal risk assessment in aviation cardiology was introduced at the First United Kingdom Workshop in Aviation Cardiology in 1984, at which the concept of linking aeromedical risk to accepted targets for aircraft accident rates resulted in the 1% rule. This was based on a series of assumptions relating to commercial aircraft operations with a target of less than one accident per 1000 million (10^{-9}) flying hours due to an incapacitating cardiovascular event. Over the subsequent 30+ years, risk management has evolved into a formal discipline practiced in multiple diverse sectors, with risk assessment forming an integral tool. Risk assessment now involves assessing not only the probability of an event, but also the likely consequences. Additionally, the operational role of the particular aircrew influences the likely impact of a cardiovascular event on aviation safety and mission.

Methods: The widely utilized process of risk assessment using risk matrices has been extended to the assessment of aeromedical cardiovascular risk. A risk matrix is a table with probabilities of events in rows, and consequences of events in columns. To include aircrew roles, a series of risk matrices are stacked to reflect the probable impact of a cardiovascular event in differing aircrew.

Discussion: This paper will present the concept of utilizing risk matrices to assess aeromedical cardiovascular risk, and present two illustrative cases.

Conclusion: The 1% rule established a target for an acceptable probability of an incapacitating cardiovascular event in aviation. Aeromedical risk assessment has evolved beyond utilizing simple event probability to include defining likely consequences of an event and the impact of the operational role of aircrew on aviation safety.