Eliminating disease/disorders which affect the management of the patient, e.g. determining if a patient has a fracture and how best to manage the patient's fracture.Giving the patient the correct treatment as a result of the cor- rect diagnosis.These may include: RISKS FROM X- AND ?-RADIATION There is no safe dose limit and all doses carry some risk.Any examinations will optimise the exposure and use the lowest dose compatible with making a diag- nosis (ALARP).The purpose of managing radiation dose in diagnostic procedures using X-ray or gamma radiation is to avoid deterministic health effects and to reduce the probability of stochastic health effects of ionising radiation.The Health Protection Agency produces an excellent leaflet, called 'X-ray Safety Leaflet' which outlines the common imaging pro- cedures and levels of risk for common X-ray and isotope procedures.To quote them, You will be glad to know that the radiation doses used for X-ray examinations or isotope scans are many thousands of times too low to produce immediate harmful effects, such as skin burns or radia- tion sickness.163 Risk-benefit It also gives approximate estimates of the chance or risk that a par- ticular examination or scan might result in a radiation-induced cancer later in the lifetime of the patient.You can also use the principles of justifica- tion and optimisation to inform the patient that X-rays are not under- taken without a valid clinical reason.The pur- pose of a risk-benefit discussion should therefore justify the examina- tion to the patient, discuss the need for the examination and quantify the risk.Practitioners must be educated in the risks and benefits and the radi- ation dose given from X-ray procedures.Significant numbers are damaged to observe a clinical effect, either immediately (erythema) or delayed (cataracts).The only effect on the patient that is known to be possible at these low doses is a very slight increase in the chance of cancer occurring many years or even decades after the exposure.Equivalent background dose, expressed in equivalent period of natural background radiation, e.g. a few days to several years.These cell(s) may subsequently die or may lead to radiation-induced malignancy.The damage is incorrectly repaired leading to mutation of the DNA.Statistical risk, expressed in numbers, e.g. risk of cancer is 1 in 1 000 000.Comparisons to general risks of cancer, i.e. the population have a 1 in 3 chance of getting cancer.For example, airline flights are very safe with the risk of a crash being well below 1 in 1 000 000.Driving or undertaking dangerous sports, such as skydiving.Whichever one you decide to use, make sure you have the correct information at hand and always discuss risk versus benefit.There are a number of ways of describing the risk.Comparison to everyday activities: ?A chest X-ray exposes you to the same risk as a 4-hour flight.Lost life expectancy, given in days.If the DNA within cell(s) is damaged there are three possible outcomes: 1.The death of a few cells in the millions within the human body has no significant effect.Don't forget the patient always has the right to decide not to have the examination.These include: ??????Smoking or drinking alcohol.??The cell(s) die.2.3.164