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**Summary: Assessment of the increasing exposure of patients to radiation through the use of computer tomography (CT) and optimization of radiation protection**

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CT-scans are responsible for a large share of the exposure to ionising radiation in medical practice. In 2004, this led a Superior Health Council (SHC) study group to look into the use of scanners (CT-scanner or CT-scan). More specifically, this group analysed the impact this technology has on the exposure of the population to ionising radiation. An additional goal was to outline the main tasks for a larger multidisciplinary group that was scheduled to meet in 2005. This report provides a summary of the work carried out by this second group and completes the preliminary report that was submitted in December 2004. With the use of CT-scans on the increase, it discusses the manner in which patient and medical staff protection can be optimized.

The first chapters of this report are primarily concerned with taking stock of the situation. They compare the position of CT-scans with that of other three-dimensional imaging techniques and discuss the use that is being made of them in Belgian medical facilities as well as internationally.

In addition, chapter 4 provides an analysis of the relative risk posed by ionising radiation, bearing in mind the effects low doses have on human health.

Next, the report turns to new trends in medical imagery, as well as new applications of CT-technology and the appearance of a combined technology (PET-CT).

The remainder of this document discusses the collective and individual doses induced by the use of CT-scans, with particular attention being paid to the paediatric population. It also presents the applications with the highest level of radiation as well as technical solutions towards reducing the level of radiation.

Finally, the report provides a series of recommendations that aim at improving the exposure of the population by making rational use of this technology.