

ICNIRP

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A summary for medical professionals particularly when working in a hospital.

The main report is headed:

"ICNIRP GUIDELINES

FOR LIMITING EXPOSURE TO ELECTROMAGNETIC FIELDS (100 KHZ TO 300 GHZ)"

<https://www.icnirp.org/en/publications/article/rf-guidelines-2020.html>

Introduction

The report, published by Wolters Kluwer Health, Inc. on behalf of the Health Physics Society and thus beginning with page 483 as page 1, begins with the introduction which mentions only "humans". All other biological forms are simply not mentioned.

"THE GUIDELINES described here are for the protection of humans exposed to radiofrequency electromagnetic fields (EMFs) in the range 100 kHz to 300 GHz"

This caution is added:

"Although these guidelines are based on the best science currently available, it is recognized that there may be limitations to this knowledge that could have implications for the exposure restrictions."

Though ICNIRP makes no announcement nor interim publication when new evidence is found or faults are found in the assumptions or reasoning. Noted by the 2022 paper by the International Commission on the Biological Effects of Electromagnetic Fields (ICBE-EMF) to which ICNIRP made no response. Science in this field is advancing rapidly and it is arguable that interim updates should be issued annually.

The report then expands its rationale in the next section and it is worthwhile to point out that it immediately states it is for the "*protection for all people against **substantiated adverse health effects***", in other words ICNIRP recognises that there are proven adverse effects from WiFi. Later in the paper it discusses **how** these may come about but I won't discuss that here.

Purpose and Scope

*"The main objective of this publication is to establish guidelines for limiting exposure to EMFs that will provide a high level of protection for all people against **substantiated adverse health effects** from exposures to both short- and long-term, continuous and discontinuous radiofrequency EMFs."*

Continuing,

*"However, some exposure scenarios are defined as outside the scope of these guidelines. Medical procedures may utilize EMFs, and **metallic implants may alter or perturb EMFs in the body**, which in turn can affect the body both directly (via direct interaction between field and tissue) and indirectly (via an intermediate conducting object). For example, radiofrequency ablation and hyperthermia are both used as medical treatments, and radiofrequency **EMFs can indirectly cause harm by unintentionally interfering with active implantable medical devices** (see ISO 2012) or altering EMFs due to the presence of conductive implants. As medical procedures rely on medical expertise to weigh potential harm against intended*

*benefits, ICNIRP considers such exposure managed by qualified medical practitioners (i.e., to patients, carers and comforters, including, where relevant, fetuses), as well as the utilization of conducting materials for medical procedures, as **beyond the scope of these guidelines** (for further information, see UNEP/WHO/IRPA 1993)."*

and

"Radiofrequency EMFs may also interfere with electrical equipment more generally (i.e., not only implantable medical equipment), which can affect health indirectly by causing equipment to malfunction. This is referred to as electromagnetic compatibility, and is outside the scope of these guidelines (for further information, see IEC 2014)."

Three mechanisms of action are discussed in the section "*Radiofrequency EMF Health Research*" from page 486 (or 5). Although there is little detail the section does mention "nerve stimulation" plus "*two primary biological effects: changes in the permeability of membranes and temperature rise.*"

The Principles report is a companion report to the Guideline.

<https://www.icnirp.org/cms/upload/publications/ICNIRPprinciples2020.pdf>

This much shorter article explains the main principles that guide the development of the report.

"ICNIRP provides scientifically-based advice and guidance on protection against adverse effects of non-ionizing radiation, including the provision of guidelines on limiting exposure."

Why would a Guideline be needed were there no "adverse effects" or it had been proven 100% "safe"?

"To establish a consistent framework of radiation protection over the entire spectrum of ionizing and non-ionizing radiation, the general principles for non-ionizing radiation protection are based, wherever appropriate, upon the well established principles for protection against adverse health effects from ionizing radiation (ICRP 2007) and the underpinning ethical values, as published by the International Commission on Radiological Protection (ICRP)."

It continues with **Categories of exposure**

*"In non-ionizing radiation protection, a distinction is made between **occupational exposure**, **exposure of the general public**, and **medical exposure of patients**."*

This is because those with occupational exposure are expected to have received **suitable education and training** about their own risks in the work environment whereas the general public and those in hospital for treatment cannot be expected to know to what they are being exposed nor what might be "safe". Note that ICNIRP never claims EMF to be "SAFE".

In any hospital the amount of wifi used in treatment and monitoring can be very high for 24 hours a day. It's important to recognise that the exposure Guidelines in the Report are specified as 6 minutes for the public and 30 minutes for trained workers. Staff at least have an opportunity to go home to an improved environment where they have at least some control but patients do not. And patients are, or can be, especially vulnerable, mentally and physically, for many reasons.

The Guideline also assumes occupational workers to be exposed for **40 hours a week**.

We can probably guess that to be an under-estimate for many hospital staff but, more importantly, it is definitely so for in-patients who, each week of their stay, are exposed to occupational levels over 4 times that (4.2 exactly) of staff.

ICNIRP agrees;

"Patients under medical care are another special category. They can be exposed to relatively high levels of non ionizing radiation for diagnostic or therapeutic purposes. If the applied non-ionizing radiation levels exceed the exposure restrictions for the general public, the intended benefits of the procedure should outweigh the possibility of adverse effects. This justification is the **responsibility of physicians** who are diagnosing or treating the patient, and who have been **properly trained** to make such judgements."*

*which is most likely

This decision will be different at different stages of treatment and recovery, and again assumes that the doctors and others have been properly and fully trained. Can we assume that all doctors and nurses have been properly educated and trained?

Note: Education is about giving people the ability to think for themselves in and around the subject. Training is showing people how to do something, without needing a deeper understanding. I would argue that for all patient facing medical staff they all need education.

Staff who are pregnant become a special, category for ICNIRP.

"Pregnant workers comprise a special category. The fetus has to be considered as belonging to the general population. If a female worker has declared that she is pregnant, she can only be exposed above the exposure restrictions for the general public provided that the exposure of the embryo or fetus remains below the general public restrictions."

We should also consider that same guidance is even more important for pregnant women (workers and patients) in the maternity ward(s) and for nursing mothers before they return home - having been given guidance about a baby's (and a child's) sensitivity to EMF.

and in a more general sense,

*"Exposure in occupational situations, both from natural and man-made sources, has to be regulated to prevent excessive exposure. It is also required that **exposed workers be informed** about the risks and measures they can take to prevent excessive exposure."*

It should be understood that patients will be exposed more than occupational workers so medical staff need training in mitigation **for those patients**. For example, 'what can be turned off at night', and 'restricting mobile phone usage to areas outside wards'.

There is additional guidance courtesy of UKHSA and the Health & Safety Executive, though the latter does not mention hospitals and covers only workers in other situations.