Steps in an eHealth Journey
By Petra Wilson

After reading information about healthy lifestyles on a government sponsored web-site Sophie Nielsen feels concerned about her health. On the site she finds a questionnaire on possible genetic predisposition to breast cancer. Sophie completes the questionnaire and, after following its advice on self-examination, finds a small lump in her breast. She immediately visits her general practitioner's web site to arrange an appointment for further advice.

Her GP examines her and agrees that something is not quite right. Suspecting that Sophie may be showing early stages of breast cancer the GP uses the national oncology decision support tool to confirm his initial suspicions. On the basis of the result he uses the regional health network to book an urgent appointment with a radiologist at the local hospital. He makes an entry into Sophie's Electronic Health Record using both a natural language description and an internationally recognised code for clinical diagnoses.

On returning home, Sophie accesses the internet once more to find a local women's health support network. Using a specialist health-oriented search engine she finds several national and regional groups whose web pages give helpful outline information about diagnosis and treatment pathways in suspected cases of breast cancer.

Some days later Sophie receives and SMS message offering her a date and time of a radiology appointment. At the hospital, the radiologist examines Sophie using a digital mammography system. Immediately after the images are captured he stores them in her Electronic Health Record and simultaneously forwards the images, which include 3-dimensional pattern recognition and comparison tools, to an international quality assured image dataset.

The digital mammography system has recognised that some of the tissue density is indicative of a cancer. The radiologist interprets the results of the image processing and advises Sophie that she should see a cancer specialist. He makes the necessary appointment using the secure health information network regional network.

Shortly after her first visit to radiology Sophie receives e-mail at home informing her of her appointment date with a cancer specialist in the regional teaching hospital. The specialist is able to access all Sophie's medical notes from both the general practitioner and radiologist using the regional secure network. After examination the specialist orders a series of blood test and arranges for a biopsy to be taken.

The blood tests reveal certain drug sensitivities. These are duly entered into the Electronic Health Record so that they may be linked into the regional electronic prescribing system in order to avoid possible medication errors in subsequent treatments.

On receiving the biopsy results the specialist consults an on-line database of medical evidence before confirming that Sophie has the early stages of breast cancer. She believes however that it may be amenable to treatment with targeted radiotherapy. She thinks it would be advisable to start therapy as soon as possible. However, before enrolling her in the therapy she asks Sophie's permission to send the data acquired through radio imaging and biopsy to a colleague in Italy for a second opinion. On receiving her colleague's diagnosis she uses the hospital's internal booking system to arrange Sophie's first course of treatment to commence in three weeks. She makes all the necessary additions to Sophie's Electronic Health Record and advises her to seek support from the counselling centre and her general practitioner.

Sophie visits the counselling centre where she is able to give a nurse access to her Electronic Health Record. The nurse considers the medical report in conjunction with the personal information Sophie gives her. Using a complex database she is able to retrieve and print several pages of health information which is targeted to Sophie's current needs. She also gives Sophie some references to trustworthy websites where she can find further information as well as advising her about trust "labels" that she should look out for when accessing information on the Internet.

Sophie's radiotherapy treatment is based upon an enhanced planning system that formulates the shape of the beam and dosage to offer minimum dosage and optimum targeting. After three courses a second biopsy and radiogram reveal that all pre-cancerous tissue has been removed. Sophie is discharged from the care of the oncologist. Her case history is noted and linked to an automatic screening recall system which means that she will be invited to screening mammograms on a regular, 12 monthly basis. Her insurance coverage is automatically initiated and processed at each visit through the use of her health insurance smart card at the point of care.

Sophie and her partner find continued support through the on-line community of people who have had similar experiences. Sophie continues medical treatment and through her on-line support system feels empowered to adjust her diet and exercise appropriately. Sophie begins to make a good recovery.