Shall we try for a baby?

How do you decide, when there is so much to gain, but so much to lose?

Peter McIntyre

Deciding to start a family is the most momentous decision many people will ever take. For someone living with a cancer diagnosis, new life can seem particularly important, but it also carries particular risks.

Everyone who tries to have a child after a diagnosis of cancer faces the same hard questions. How do you balance the desire to have children with the risk to your own health? Will the cancer or the treatment pose a threat to the baby's life or welfare? Will the parent live to see the child grow up?

Patients and former patients are pioneering routes to parenthood after cancer and their life's hope is to have a child and live long enough to see the child grow. But not all succeed. As with the cancer itself, there is an apparent randomness about winners and losers.

There are few data to show the overall prospects for motherhood and fatherhood for those who are diagnosed with cancer at a young age. Those who set out on this journey search the road for signals of hope or of danger, communicating with each other by email or through the Internet.

CML and parenthood

Physiotherapist Carl has chronic myeloid leukaemia (CML) that has damaged his sperm. But he and his wife Rachel have not given up hope of becoming parents. Rachel says, "Once you have found the perfect partner you want to have the perfect child to complete your perfect life. It would make us complete really."

Carl found out about his CML on Christmas Eve 2007 through an MRI scan on an injured knee. He had his sperm frozen before starting to take Glivec (imatinib). But when the sperm was tested Carl was found to have severe oligospermia (low sperm count), probably caused by the CML.

Rachel and Carl had one unsuccessful course of IVF at the Queen's Medical Centre in Nottingham, England. Rachel says, "Infertility is a nightmare on its own and so is having leukaemia. It is just unlucky that they are combined. Every couple that goes through it is on such an emotional roller coaster. It is not just the drugs you take – it is the emotional battering waiting for the next test and waiting for the results."

They plan to try again. Carl says, "I would love to have children. Maybe that is selfish of me because you may be talking about a kid growing up with no father. I am feeling fine and the treatment is going fine so there is no suggestion that it is going to be like that. But if you want kids that badly, which we do, then you should do as much as you can to make it happen."

There has been a lot of discussion in CML chat rooms and support sites about the safety of having children when under treatment. While some men father children while on Glivec, women are strongly advised not to conceive while on the drug, as it is likely to affect the growth of the foetus. Most have to make a choice between the baby and the life-saving drug.

Sharon Morris was a marketing assistant in Germany when she was diagnosed with CML in 2001 at the age of 28. A combination of Glivec and interferon got her leukaemia under control. In 2003 she married and in 2005 decided to try to become pregnant. "I was in complete cytogenic remission. My consultant recommended against it and said it was at my own risk, but when I went ahead he was supportive."

Sharon came off Glivec but continued to inject herself with interferon, which has been used in the treatment of cancer for 20 years and is known not to pass the placenta. Then came a cruel blow. Her husband was found to have a low sperm count. "We hoped that I would get pregnant very quickly so I would not be off the Glivec for so long. My husband's infertility problems came as a huge shock to us."

In May 2005 she underwent IVF, and became pregnant at the first attempt. Baby Kiera was born in January 2006. "I was very, very lucky. I had a very easy pregnancy, with no problems whatsoever, and an easy birth. The baby was a good weight. I could not breastfeed because the doctor wanted me back on Glivec straightaway, and I retained complete cytogenic remission. It was like a dream come true."

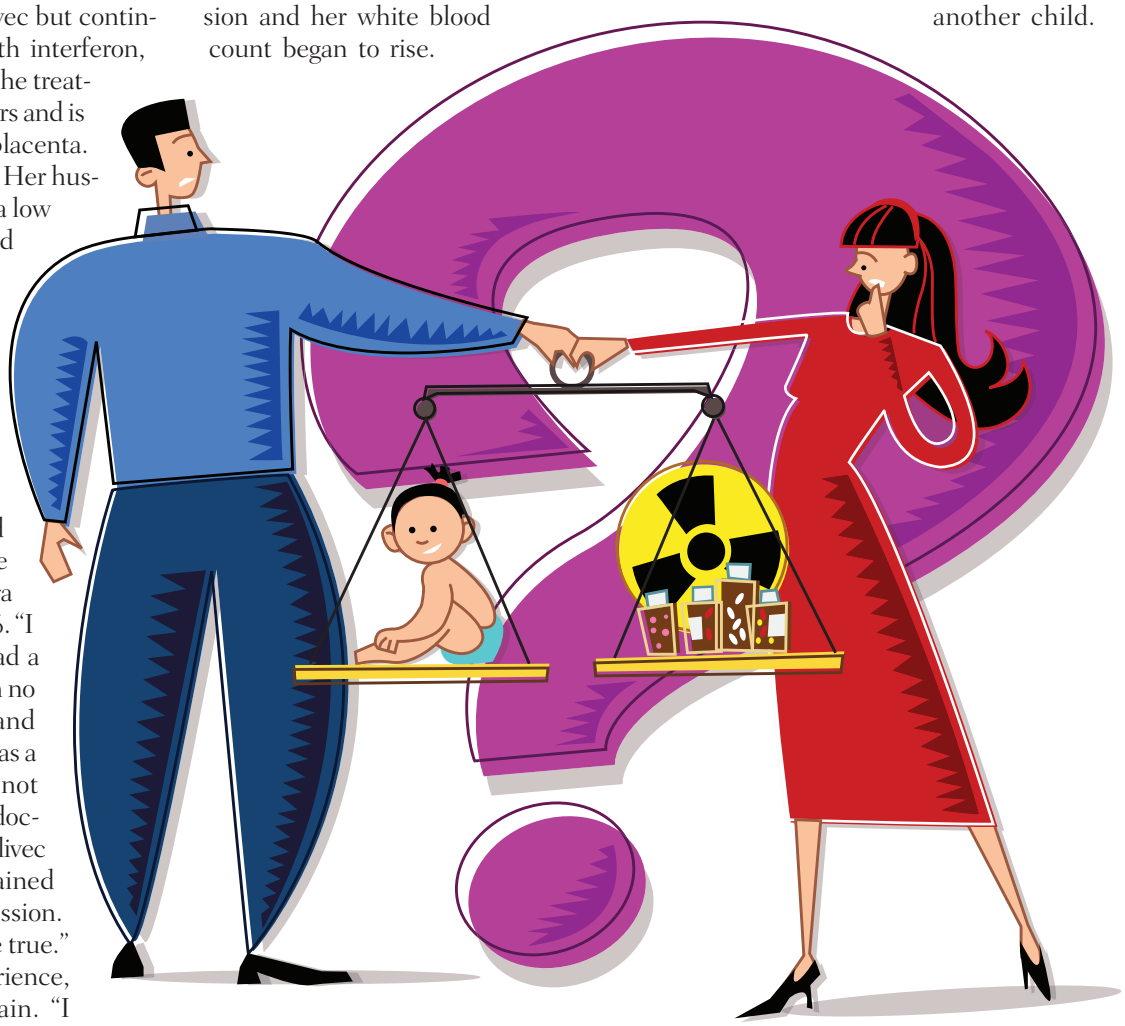
Boosted by this experience, they decided to try again. "I wanted at least two children – a sibling for my little girl. I weighed up the positives and the negatives. I did have great belief in Glivec. I asked my doctor and again he did not advise it, but again he supported me.

She suspended Glivec, returned to IVF and was lucky again, becoming pregnant immediately. This pregnancy was not so easy and in the fifth month of her pregnancy she lost complete remission and her white blood count began to rise.

But in April 2008, at the age of 34, Sharon gave birth to another healthy daughter, Hannah.

Sharon says, "I count my blessings for my two children every single day and I am a very happy lady. Basically they are my world, my two little sunshines. It was definitely the right decision."

Sharon got remission back within three months of restarting Glivec, but says she will not try for another child.



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"I have always been of the opinion that I will lead my own life and that CML will not dictate to me. I thought that I have control over it. I don't have that feeling any more. I have two healthy children and I do not want to push my luck any more. My partner was very concerned during the second pregnancy when my remission started to go."

Sharon hopes her experience will give other people courage. Certainly Michelle Richards, diagnosed with CML as recently as September 2009 at the age of 29, wants to hear positive stories. She and husband Chris have lived together happily for 11 years. "We both love kids and we always see ourselves having children in the future, but we were in no rush. We were too busy living our lives, happy 'just the two of us'. Since diagnosis, I have definitely found myself talking and thinking about children and wanting them a lot more.

"Even now Chris is saying 'You come first and if we don't have children it is not the end of the world.' I think deep down I would be devastated if we didn't have children. But I wouldn't take any risks. It would have to be the right circumstances."

Michelle, marketing director for a London publishing company, finds herself searching out stories of other people's experiences. "I have no idea what people did before the Internet – it would have been terrible. It has been such a source of information. There are increasingly more women with CML and men as well who are having families. We are scattered all around the world so it is nice to be able to keep in contact and see how they are doing."

One person who has helped that to happen is Jan Geißler, who has himself become a 'CML father'. Jan participated in an early Glivec trial after he was diagnosed with CML in 2001. He set up a website, leukaemie-online.de, to help leukaemia patients in German-speaking countries, and is now director of the European Cancer Patient Coalition (ECPC), where his wife Michi runs the office (see Cover Story, page 4).

"When I was diagnosed at the age of 28, children were not my first concern. And the doctors did not talk to me about fertility or freezing sperm. Finally, a leading doctor told me he was not in a rush to start treatment, so I had better go to a sperm bank. I did that even though later on both of my children were fathered in a natural way.

"Later I and my wife were interested in having children. I started to read all the material about getting children whilst on Glivec therapy, or stopping therapy, including anecdotal reports in journals, results of animal studies, and patient forum reports about babies being born despite all warnings."

The couple made one unsuccessful attempt at IVF using the frozen sperm and Michi had a bad reaction. Jan says, "It was really a rough ride. On the one hand the pregnancy did not work and on the other my wife put her body into complete turmoil. You are being pushed

FERTILITY AFTER CHILDHOOD CANCER

Children who have cancer can have their fertility damaged by radiotherapy close to the ovaries or testes or by chemotherapy with drugs such as cyclophosphamide.

Experimental cryopreservation therapies may protect the future fertility of boys and girls who have not yet gone through puberty, but these are largely unproven. One team has reported taking and freezing eggs from a five-year-old girl.

For those who do have children, there is good news from two studies reported in the October 2009 *Archives of Pediatrics & Adolescent Medicine*. They show that women who had childhood cancer are no more likely to have major complications during pregnancy or have babies with major birth defects than other women. There is an increased risk of premature birth or low birth weight, but Julia Rowland, director of the (US) NCI Office of Cancer Survivorship, said: "The most important take-home message is that for childhood and adolescent cancer survivors who go on to have families, the prospect for having healthy offspring is excellent."

Aimilia Tsirou is President of Kyttaro (the Association of Childhood Cancer Adults in Greece). She has concerns about the low level of information given to some children with cancer, which affects their awareness of fertility issues as they grow older.

"In a lot of cases when the child is so young and does not have specific memories, parents do not talk about the cancer experience. Sometimes they do not even say 'cancer'. They just say it was a bad illness. Parents should inform their children about their former cancer. Survivors should know about their medical history."

up with hormones and she crashed after it did not work."

Although the doctors warned him that they could not recommend fathering children while taking Glivec, Jan's reading of the research and accounts of healthy 'Glivec-babies' in patient forums was that the risk to sperm seemed rather low. They decided to try for a baby (without IVF) while Jan continued to take Glivec and interferon. "Of course we were very worried and we thought back and forth for a couple of years about whether we would take the risk." However, in 2006, Michi became pregnant.

In October 2006, a healthy little girl Hanna was born. The following year, with Jan now on interferon alone, they tried again, and in 2008 Michi gave birth to Hanna's sister, Laura.

Most CML patients are 60+, but pregnancy is a big topic for the younger generation of patients. "It is a permanent discussion," says Jan. "The women who have CML are in an even more difficult situation, because they need to trade the risk to the baby by continuing to take Glivec, or stopping therapy and increasing the risk for the mother. You cannot just say I am stopping for nine months, because it can take several months to get pregnant."

Jan and Michi run the ECPC office from home in Munich, and Jan loves spending time with the children "If am not working away for ECPC, I am working from home. It is wonderful. I can see them for breakfast and dinner. When I was diagnosed with cancer I could not imagine becoming 36 years old, let alone becoming a father twice."

Glivec babies. No doctor would recommend fathering a child when on Glivec, so Jan and Michi had to make their decision on the basis of anecdotal reports in journals, results of animal studies and the experiences of other patients

Breast cancer and fertility

The largest group of women affected by cancer and fertility problems are breast cancer patients. When breast cancer strikes at a young age chemotherapy poses substantial risks to fertility, while most forms of fertility assistance require hormone treatment which can also stimulate cancer cells.

Marie helped to write a Europa Donna Ireland guide to fertility for younger women with breast cancer. After she was diagnosed with breast cancer in 2004 at the age of 34 she agonised over whether to have adjuvant chemotherapy.

"Was I being selfish and irresponsible in wanting to preserve my fertility? Would it be fair to have a child if I might die? These were the questions that kept me awake at night and trawling the net during the day." Writing in her blog Journeying Beyond Breast Cancer (http://beyondbreastcancer. wordpress.com), she describes how, in the end, she felt she had no real alternative.

"During treatment I was haunted by the thoughts of what must be happening to my chances of ever having my own child. When my periods stopped and I went into an early menopause, I continued to search desperately for the stories of women who went on to conceive after chemotherapy."

Then her periods returned and in early 2009 she discovered she was pregnant. But Marie's joy was short lived. She lost the baby at ten weeks. Since then her feelings have fluctuated. She said "While I grieve that loss deeply, I won't give up hope that the miracle will happen again."

For every tale of heartache, however, there is a woman whose dreams have come true. Irini Zannara, who works in Athens for a shipping company, was diagnosed with breast cancer in 2001 at the age of 32. Her periods stopped for two years while she was treated with Zoladex (goserelin), which stops the ovaries from producing oestrogen, but they resumed a month after treatment ended. Irini, who

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is vice president of Alma Zois, the Pan-Hellenic Association of Women with Breast Cancer, married in 2006 and the following year at the age of 38 gave birth to her daughter Iris-Hope.

Irini said, "It is the best gift I could ever receive from life. Motherhood means more to me even than before. But of course I am also worried. I don't want to get ill again. I have to take care of myself and be healthy in order to take care of my child. On the other hand I feel quite safe because I know if something happens to me again I will detect it early. My baby is my first priority now."

Cancers of the reproductive system

Testicular cancer

For men testicular cancer is a major risk to fertility. However, a review of testicular cancer by Fosså et al. in the *British Journal of Urology International* (November 2009) says that 80% of men who have one testicle removed continue to produce sperm, although 20% of survivors suffer irreversible hypogonadism before diagnosis. Men are advised to freeze semen before treatment, but only 10% use their sperm later on and many go on to father children naturally. Andy was not so lucky. When diagnosed with testicular cancer in March 2007, he already had a very low sperm count. Fertility experts managed to isolate 11 sperm and to fertilise seven of his wife's eggs. But none of the embryos took and they have now all been used. Writing in his blog (http://www.myoncofertility.org/videos/survivor_experiences), Andy says, "The doctor did tell us that when you freeze embryos it's not as high a chance of survival when they thaw it out. Now we've got no sperm. My wife and I went through an IVF and no baby is on the way, so that was extremely devastating."

Ovarian cancer

Women also face cancers that directly affect the reproductive system. Louise Bayne, then a midwife in Bristol, England, and now chief executive of the UK-based cancer support group Ovacome, had just become a first-time mother when her cancer was discovered. When her son Conrad was two weeks old, a routine postnatal check found that what was thought to be an ovarian cyst was in fact a multilocular bilateral ovarian mass.

The mass was found to be a borderline tumour, but her consultant obstetrician resisted an immediate hysterectomy and instead conducted a bilateral removal of tumour leaving the uterus and a bit of ovarian tissue behind.

Louise is eternally grateful for this decision. "I just wanted to get to the point where my son would remember me. I remember saying this to her at the time: whatever you need to do you do it. I just want him to be old enough to remember me.

"We were in that lovely glow of having a small baby and life was great and this suddenly came like a sledgehammer, you really did feel like your legs had been taken away from underneath you. I think, on reflection, I resent that it took away that golden time in any family's life in celebrating the miracle of this beautiful child."

"Thank goodness she was conservative. I owe her so much. It would have been very easy for her to go ahead and do a hysterectomy. There certainly were medical grounds for doing it. If it had not been for her wisdom and cautious approach I would not have been able to go on and have my beautiful daughter. She was an absolute salvation."

After Louise moved with her husband and young son nearer to London, her team at the Royal Marsden found another suspicious growth on one of her ovaries and the decision was made to go ahead with a hysterectomy. Two days before the operation a nurse phoned to talk through the procedure and casually asked, "You have had your period, haven't you?" To Louise' amazement, she found she was pregnant.

For some time it appeared that she would lose this baby. She had a corpus luteum (tissue formed after

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The best gift. Irini Zannara did not know what would happen to her chances of becoming a mother after taking adjuvant hormonal therapy for breast cancer; her only concern now is to remain healthy so she can care for little Iris-Hope

ovulation) next to the ovarian mass. Then came the day when a scan discovered a tiny flicker of a heartbeat. Elizabeth was born perfectly healthy a few months later.

If Louise had felt invulnerable, her husband (a surgeon) brought her down to earth. He told her, "I know you always thought it was important for Conrad to have a brother or a sister. I always thought it was more important that he had a mum." Louise says, "That really did make me gulp. I did not think I was being selfish or making dangerous decisions, but it did make me reflect quite long and hard about whether I had risked things."

Soon afterwards, Louise's tumour markers started showing danger signs again. "The Marsden said, 'We think you probably skated on thin ice long enough, don't you?' and I said 'absolutely' and went ahead and had the hysterectomy when she was a few months old. I always wanted to have five children. I still regret the children that we don't have, but I have to be incredibly grateful for the two beautiful children we do have, and we are so very, very lucky to have them."

Although most people with ovarian cancer are older, Louise and Ova-come see younger women who have had aggressive surgery and lost the chance of having children. "There is a much better understanding of the importance of preserving fertility, but at the end of the day the duty of care is to the women themselves and ensuring they get the best treatment. In stage 1, if there is only one ovary affected, I think that most surgeons will go for a fertility-sparing procedure, but if the disease is advanced then it is not really discussed."

One of the areas of hope for women and men with early cancer are the advances in fertility therapies and cryogenic preservation of sperm, eggs and ovaries (cryopreservation). However there are clear dangers in traditional hormone-based therapies for women with hormone-related breast cancer, while ovarian transplant back into the woman is not suitable as the material may contain cancer cells. Louise Bayne said, "There have not been the advances in cryopreservation that I would have liked to have seen, but nonetheless it does give people a window of hope for the future."

And for couples who are unable to give birth to a child, or decide the risk to mother or child may be too great, there are still other avenues. One is surrogacy. Another is adoption. The possibilities and obstacles that may face people with cancer who opt to go down this route will be explored in a future article.

"I did not think I was being selfish, but it did make me reflect quite long and hard"