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UNION OF AMERICAN
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איחוד ליהדות מתקדמת באמריקה

BIO-ETHICS STUDY GUIDE XII

GENETIC TESTING

JEWISH
FAMILY
CONCERNS

Creating Caring Congregations

UNION OF AMERICAN HEBREW CONGREGATIONS
DEPARTMENT OF JEWISH FAMILY CONCERNS
STUDY GUIDE #12: EDITED BY DR. MORT PRAGER
2001

ACKNOWLEDGEMENTS

This study guide has been made possible by the generous support of the

DYSAUTONOMIA FOUNDATION, INC.
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We appreciate the support of Dr. Mort Prager, who edited this study guide.

Thank you also to Dr. Mark Levin for permission to use his article and to Courtney Miller for her encouragement. Likewise, thanks to Janie Haddad of the Department of Jewish Family Concerns for her work in preparation of this study guide.

The Department of Jewish Family Concerns also wishes to acknowledge the encouragement of the National Foundation of Jewish Genetic Diseases, Inc.

We also express thanks and appreciation to Marcia Hochman, assistant director of the Department of Jewish Family Concerns as well as Dr. Harvey Gordon, chair of the Department's Committee on Bio-ethics. Finally, continuing thanks to the executive leadership of Jewish Family Concerns; Jean Abarbanel, chair; Mike Grunebaum and Marshall Zolla, vice-chairs.

STUDY GUIDE #12: CONTENTS

1. Introduction to Study Guide	1
2. Background Articles and Personal Reflections	
a) Genetic Testing: Promise and Dilemma	4
b) Genetic Testing and Screening	8
c) The Ethics of Genetic Testing: Some Family Implications	20
d) A Grave Jewish Inherited Disease	22
e) Raising a Child Profoundly Affected With FD	24
f) Lori's story.	28
3. Approaches From The Jewish World	
a) Screening Jews and Genes: A Consideration Of the Ethics of Genetic Screening Within the Jewish Community: Challenges and Responses	30
b) Genetic Screening from a Traditional View	37
c) "A Secret Affliction: Manic Depression and the Jews"	50
4. What You Should Know About Jewish Genetic Diseases: Descriptions and Resources	55
5. Reform Movement Resolutions on Breast Cancer, Genetic Testing and Health Insurance Discrimination:	
Central Conf. Of American Rabbis. 1997	67
UAHC. 1997	69

INTRODUCTION TO BIO-ETHICS STUDY GUIDE #12: GENETIC TESTING

Shalom.

The rapid progress of technology in the field of genetics has brought increased attention to the issue of testing of individuals for suspected genetic disorders. Such testing has raised questions regarding the ethics of that testing and the resulting concerns of what to do with the information that is made available as a result of the testing. Specifically, if tests come back that one or both of a couple is a "carrier", or that a fetus is also a "carrier" of a genetic disease or potentially harmful gene; what are the moral options of choice?

Increasingly, these discussions are part of pre-marital sessions or classes. Our young people are more open to such discussions as their own secular education deals with the impact of the revolution in genetics. Likewise, issues of genetics play an important role in the discussion of many of our couples who, once married, choose to delay child bearing until later in life.

The purpose of this guide, like the previous eleven, is to provide information to our congregations on an issue of emerging medical technology from a contemporary Jewish perspective. Hopefully, a congregation will take this information and use it as a foundation upon which to build programs of education and awareness.

Education and awareness are fundamental aspects in breaking down barriers of fear and misinformation. Courtney, a teenager from one of our congregations in Louisiana, wrote of her struggle with living with a genetic disease and the importance of raising awareness within our community:

It is now our duty to be strong and to keep people alive. Hopefully we will not have to face such tragedies as the Holocaust again in our days, but we have other struggles to overcome. One of these is the fight against Jewish Genetic Disorders (JGD)...Now that technology has advanced and we are no longer struggling for our lives we have the opportunity to fight against this force, a force not caused by manpower, but by our own bodies...Though we can not always prevent JGD's from invading our lives, we can

choose to inform ourselves and others so that we may be able to take appropriate action when the need arises.

The study guide opens with a brief overview on the issue of genetic testing. It is followed by a series of personal testimonies that briefly give us insights into families and individuals that faced difficult situations. We have also included some important material which provide background on the issue from the Jewish and general points of view. In addition, there are recent resolutions and policy statements on the issue of genetic testing and screening from the CCAR and the UAHC, as well as other Jewish organizations.

Your congregation can develop some important programs in this area. Some program ideas include:

- the creation of seminars and workshops on the ethics of genetic testing as well as the issue of "what to do with the knowledge you gain?"
- Health fair for the congregation including opportunities for Testing
- Display of brochures in the temple office highlighting basic information on genetic diseases
- Awareness and education programs for synagogue youth
- Personal testimonies/sermons on the ethics of testing etc.

The number of our congregants who will be impacted by these technologies will increase in coming years. We hope that you will develop opportunities to show how Jewish thought and tradition can assist them in making sacred choices in what may be difficult situations. Again, the opportunities for family/clergy dialogue are present.

As usual, the UAHC Department of Jewish Family Concerns is ready to assist you and your congregation in developing programs.

B'shalom

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GENETIC TESTING: PROMISE AND DILEMMA

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The ability to test for abnormalities in hundreds of human genes has developed over a relatively short period of time. When such scientific advances occur rapidly, there is often a cultural lag until the community learns how to use its new knowledge wisely. Genetic testing is no exception, for while it holds great promise and is already delivering benefits, there are issues which still must be met regarding the use of such information. There must be safeguards against 1) violating privacy, 2) discriminating against employability, 3) insurability, or 4) upsetting family relationships.

When considering a decision to test, pertinent questions to be answered are whether the disorder appears early or late and whether it is curable or at least treatable so as to minimize deleterious effects on the quality of life. How a person answers these questions may logically come from the goal the individual has for wanting to be tested. Some goals relate directly to the individual's personal health as, for example, prevention of disease, preparing for what is to come if disease is inevitable, and initiating therapy at a propitious time to minimize pathologic effects if, indeed, there is available treatment. Other goals may be more reflective of other aspects of life: choosing a marriage partner or deciding to have children.

The number of diseases recognized as resulting from a single gene defect is approximately 5000, and tests are now available for about 10%. If a genetic disorder follows dominant inheritance, one of the parents will exhibit the disease, and there is a 50:50 chance that an offspring will as well. An autosomal recessive inheritance pattern means both parents are carriers of the defective gene, and both must pass it to the offspring for disease to be manifest. Therefore, with each pregnancy there is one chance in four that the child will be affected, two chances the child will be an asymptomatic carrier like the parents, and one chance in four that it will be free of the abnormal gene. Couples with family history may wish to test the developing fetus. Amniocentesis may be performed after about 4 months of gestation, chorionic villus testing (CVT) somewhat earlier. Amniocentesis carries a risk of inducing spontaneous abortion about once in 200-300 times; CVT, a slightly higher risk. If an abnormal gene is discovered, the couple is then faced with a decision to continue or to terminate the pregnancy. At this point the age of onset of disease and availability of beneficial treatment become paramount considerations. Cystic fibrosis, for example, makes life tenuous but permits survival for several decades. Huntington's Disease permits life to be normal for more than 30 years before symptoms begin to appear and lead to premature death. These situations are very different from Tay-Sachs Disease, a disorder with increased incidence in Ashkenazic Jews, which leads to death in a couple of years with degeneration of the nervous system. Most Jewish authorities seem to feel that in the latter case, pregnancy termination is justified. Certain ultra-Orthodox communities require pre-marital testing for several gene defects that are relatively more prevalent among Jews. If both are carriers of the abnormal gene, they are counseled not to marry, advice derived from the concept

of caring for the body which belongs to God. Therefore, one does not knowingly risk bringing a defective body into the world. By choosing another marriage partner, they obviate the particular problem and are free "to be fruitful and multiply", the first command found in the Bible. Of course, the couple may proceed to marry knowing statistics indicate that 3 times in 4, they will have a healthy child. Alternatively, they have the options of fetal testing and abortion if the disorder is severe, adoption of one of the many children in need of a home, or perhaps eliciting a third party as a gamete donor. If a couple is attempting in vitro fertilization, preimplantation diagnosis becomes a possibility. While the pre-embryo is still at the eight-cell stage, a cell may be removed, the DNA replicated, and genetic testing performed. Only pre-embryos testing normal are then implanted. This procedure, which eliminates the need for making a decision about aborting a pregnancy, is only available in an area where the latest technology has developed. However, there should be an awareness of the relatively low success rate for in vitro fertilization of only about 20%.

Some disorders have variable penetrance, i.e., before a disease process appears, factors in addition to the genetic abnormality are required. In such cases it is not possible to provide more than a probability statement regarding disease occurrence. Such a situation prevails in the case of testing for the BRCA genes, abnormalities of which predispose to breast and ovarian cancer. This genetic abnormality has been of special concern to women of certain ethnic groups who have a higher incidence of the abnormal gene than is found in the population at large. Early analysis suggested that women inheriting the abnormality had an 85% chance of developing breast or ovarian cancer in their lifetime, but with additional data the figure has been reduced to something over 50%. Despite this figure representing risk rather than mortality, fear led some women who discovered the inherited abnormality to undergo prophylactic removal of breasts and ovaries despite not knowing with certainty whether cancer would develop or whether surgery would prevent it. However, a retrospective study (Jan. 1999) of women, with a family history of breast cancer, who underwent prophylactic bilateral mastectomy were found to have a 90% reduced incidence. This procedure should be weighed against careful watching after testing positive for the abnormal gene so that surgery could be performed at the earliest sign of a tumor when breast cancer is curable.

A potential result of the increasing availability of genetic information is that individuals born with certain defects may become stigmatized. As their number diminishes, those exhibiting a defect may be resented because "the problem should have been taken care of prior to birth". The finger of blame could be pointed at parents who did not take steps to prevent such a child being born, either by pre-marital testing for abnormal genes or by testing the fetus and aborting it. A poll of a group of social scientists, ethicists, and psychologists expressed their belief that there will be decreasing acceptance of birth defects. One can certainly imagine a negative response from a community asked to accept the burden of caring for these disadvantaged individuals when antenatal testing and pregnancy termination could have led to prevention. However, abandoning these people would be contrary to Western religious tradition which has long urged concern and care for those in need. How should the problem be met? There can be pre-marital testing for whatever genetic abnormalities may be suspected. As with all genetic testing, the individuals should undergo counseling so

that all options are clearly delineated and understood. Even before test results are known, it is advisable that a course of action be decided for whichever way the tests turn out.

If as Elliott Dorff emphasizes in his scholarly book *Matters of Life and Death*, the body belongs to God, then as with anything borrowed, there is an obligation to care for it. If genetic testing leads to discovery of a tendency to develop a disorder that can be successfully treated if caught early or, even better, prevented by a change in life style, the individual has an obligation to take advantage of the opportunity. This religious view places an obligation on the individual to make certain he knows how to access medical facilities wherever he may live. Since it is unlikely that medical specialists and equipment available in our metropolitan centers will be as readily available in more rural areas, those living in small towns have an extra responsibility to themselves and their families to plan for medical emergencies.

There has been great concern regarding the confidentiality of the results of genetic testing. It is clear that such information could be used to the detriment of the individual in employment and in insurability. This might be true even for the asymptomatic person who is known to have an inherited factor predisposing to a health problem that can only be defined on a probability basis. It is unjust, for example, to deny employment to a 25 year old woman with a BRCA abnormality because she might develop cancer some time in the future. A number of states have passed legislation to prevent genetic information from being used to deny employment or insurance. At the Federal level the Americans With Disabilities Act prohibits discrimination on the basis of a physical handicap, and that has been interpreted to include those with a genetic abnormality predisposing to health problems in the future. How that interpretation will ultimately be applied must await completion of the arguments in court.

Once an individual has decided to be tested, there are family concerns that should be considered. To get the most definitive information, family members should also be tested. However, some would rather live with uncertainty than receive bad news that indicates an unhappy future. For those with this mindset, being tested might parallel being able to read one's obituary. Most people would certainly shy away from such information. These family members might resent being placed in a situation where they have to deal with the issue, thereby damaging family relations. Others might wish the information in order to prepare for what is to come. A pertinent case in point concerns Huntington's Disease. It has a dominant inheritance pattern with disease not manifesting itself until the late 30's or early 40's and with no known treatment. This late appearance means that a couple may have children long before there are disease symptoms. It also means that any children they may already have produced have a 50:50 chance of having the gene defect. Unless there was already a family history, they would not know they were at risk until perhaps their teen years when they saw a parent developing symptoms. This might well occur as they approached marriage age. By being tested, life planning could proceed in an enlightened way. A person testing positive could presumably still go ahead with marriage if the partner is well informed, but having children would appear to be an unwise risk. Other conditions are less dire when tests are positive for an abnormal gene. An abnormal BRCA gene, for example is certainly cause for concern, but life style changes may delay or conceivably even eliminate disease appearance. If one observes the

natural inclination to protect one's life, then testing offers the possibility of prolonging and preserving life. One should be aware that testing is not always decisive. Without counseling and the informed view it can bring, an individual testing negative may assume he/she is safe from the feared abnormality. However, a negative test may simply mean that an abnormality in the gene was not detected by the methods employed. The BRCA genes, for example, are quite large and hundreds of alterations have been documented, but only a few of the common mutations, strongly associated with a tendency to form malignancies, are generally tested for. To test for all the possibilities is unwarranted because of the cost, time required, and the small return anticipated from testing for many of the described abnormalities. Currently litigation is pending against Myriad Genetics, a U.S. firm holding patents on automated testing for mutations in BRCA1 and BRCA2. The Institut Curie in France filed suit because the test fails to detect certain mutations newly discovered in the Curie laboratories. They claim the Myriad patents prevent them from pursuing commercialization of their own discoveries, which would make the information available to the public, and as a result this represents a potential danger to French cancer patients.

When genetic tests are performed on the fetus, characteristics in addition to the one being sought are commonly learned. This includes gender, and in some parts of the world gender becomes the basis for a decision to terminate a pregnancy. In India, in particular, there has been discussion of the large number of female fetuses that were being aborted. Abortions performed because of unwanted girls are highly unethical in that the practice indicates that half the human population is undesirable. Of course, if the practice were carried to its illogical conclusion, nature itself would begin to right the problem, or the human race would destroy itself.

January 2001

GENETIC TESTING AND SCREENING

by

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Headlines in the science pages of newspapers and journals have highlighted recent stunning advances in biochemistry, cytogenetics, and molecular biology and also in the understanding of human genetic diseases. The success of the Human Genome Project in unraveling the nucleotide sequence of each of our chromosomes is truly remarkable. Yet the identification and chromosomal location of genes associated with human genetic disorders—cystic fibrosis, Tay-Sachs disease, Duchenne muscular dystrophy, Huntington's Disease, familial breast cancer and many others—are only the telltale precursors of what the future holds.

Such new information opens the possibility of testing for these disorders and, in some cases, permits the development of new treatment strategies. It also raises many questions, ranging from the pragmatic (e.g. will health insurers pay for these new tests and therapies?) to the profound (e.g. how can we as a society avoid misusing genetic information?).

To illustrate some of the issues raised by recent advances in genetic testing and screening, we will present and then discuss three cases. The first case addresses issues related to carrier screening and prenatal diagnosis for diseases like Tay-Sachs in a high risk population; the second looks at predisposition testing for breast and ovarian cancer in families at risk; the third deals with presymptomatic testing for a neurological disease like Huntington's disease in a family with a history of the disease.

Case 1. An Ashkenazi Jewish couple meets with their rabbi for pre-marital counseling. Among the many things discussed, the rabbi mentions that they may want to consider carrier testing for Tay-Sachs disease, Canavan disease, and perhaps Gaucher disease as all three are more common in those of Ashkenazi descent than in the Sephardim or the general population. The couple have heard of Tay-Sachs but neither know anything about Canavan or Gaucher disease. What information does the couple need before deciding whether to be tested or not? What issues might carrier testing raise for them? What issues might it raise for the larger Ashkenazi Jewish population?

I. What information would this couple need before deciding whether to be tested or not?

A. Information about Tay-Sachs disease, Canavan disease and Gaucher disease

1. The classical form of Tay-Sachs disease (TSD) is a fatal genetic disorder in children that causes progressive destruction of the central nervous system. It is caused by the absence of a vital enzyme called hexosaminidase A (Hex-A). Without Hex-A, a fatty substance or lipid called GM2 ganglioside accumulates abnormally in cells, especially in the nerve cells of the brain. This ongoing accumulation causes progressive damage to the cells. The destructive process begins in the fetus early in pregnancy, although the disease is not clinically apparent until the child is several months old. By the time a child with TSD is three or four years old, the nervous system is so badly affected that life itself cannot be supported. Even with the best of care, all children with classical TSD die early in childhood, usually by the age of five.

2. Canavan disease (CD) belongs to a group of conditions known as leukodystrophies, which result from defects in myelin. Myelin is an integral component of the nervous system and its function is to protect nerves and allow messages to be sent to and from the brain. In CD, the white matter (i.e. myelin) deteriorates because patients have a deficiency in the enzyme aspartoacylase, which leads to the accumulation of a chemical called N-acetyl-aspartic acid. It is not known exactly how these chemical imbalances cause the destruction of myelin. Clinical signs in an individual with CD begin during infancy and, as the child grows, motor skills and mental functioning deteriorate. Difficulties which arise as the child grows include blindness, stiffness, weakness of the muscles, seizures, and feeding problems. Although many children with CD die in infancy, some survive into adolescence but few survive to adulthood.

3. Gaucher disease is an inherited storage disease which results from deficiency of the enzyme glucocerebrosidase, which is necessary for the breakdown of a particular fatty substance, glucocerebroside. This fatty substance is normally present in very small amounts in all body cells, but in patients with Gaucher disease, glucocerebroside is not broken down as it should be and accumulates in cells in the bone marrow, spleen and liver -- but not the brain. The clinical manifestations of Type I Gaucher disease usually become apparent in childhood or early adulthood, but some persons remain asymptomatic even in their 50's and 60's or later. Common early symptoms include an enlarged spleen and hematologic or orthopedic problems. Since there is marked variability in the severity of Type I Gaucher disease even within a family, it is difficult to predict the future severity and extent of complications in individual patients. Patients with severe symptoms of Gaucher have several treatment modalities available to them, including surgical interventions and enzyme replacement therapy. Together, these can reduce most symptoms of Type I Gaucher disease, and may even reverse disease progression.

B. Pattern of inheritance of Tay-Sachs disease, Canavan disease and Gaucher disease

1. All of us carry genes, in pairs, located along 23 pairs of chromosomes. TSD is controlled by a pair of genes on chromosome 15; these are the genes that code for the enzyme Hex-A. If either or both Hex-A genes are active, the body produces enough of the enzyme Hex-A to prevent the abnormal build-up of the GM2 ganglioside lipid. Carriers of TSD--people who have one copy of the inactive gene along with one copy of the active gene--are healthy. They do not have Tay-Sachs disease. The only significance of being a carrier is the possibility of passing the inactive gene to one's children. A carrier has a 50% chance of passing the inactive gene on to his or her children; any child who inherits one inactive gene is a Tay-Sachs carrier like the parent. If both parents are carriers and their child inherits the inactive TSD gene from each of them, the child will have Tay-Sachs disease since he or she has inherited two inactive recessive genes and, therefore, cannot make any functional Hex-A.

When both parents are carriers of the inactive Tay-Sachs gene, they have a 1 in 4 chance (25%) with each pregnancy that their child will have Tay-Sachs disease, and a 3 in 4 chance (75%) that their child will be unaffected.

This pattern of inheritance is called autosomal recessive inheritance.

2. Canavan disease and Gaucher disease are also inherited in an autosomal recessive fashion. Hence, only when both parents are carriers of the same disease gene can they have a child with the disease in question.

3. Recessive diseases such as Tay-Sachs, Canavan disease and Gaucher disease often occur more frequently, though not exclusively, in a defined population. A person's chances of being a carrier of any of the above diseases are significantly higher if he or she is of eastern European (Ashkenazi) Jewish descent. Current research indicates that approximately one in every 27 Jews of eastern European descent in the United States is a carrier of the TSD gene, one in 40 is a carrier of the Canavan gene and one in 15 is a carrier of the Gaucher gene.

II. What are the most common questions asked by a couple like the one described above?

A. How does one find out if either of us is a carrier of Tay-Sachs disease, Canavan disease or Gaucher disease?

Tay-Sachs disease, Canavan disease and Gaucher disease most often appear in families with no prior history of the disease. The only way to know in advance whether a woman and her partner are at risk for having a child with one of these diseases is to find out if one or both are carriers for it or not.

1. There are two ways to determine if a person is a carrier for Tay-Sachs disease - one involves looking at the amount of Hex-A enzyme present (i.e. biochemical testing) and the other involves direct examination of the Hex-A gene's structure (i.e. DNA testing). The tests currently available detect between 95% - 99% of Tay-Sachs carriers of Ashkenazi Jewish background.

2. Biochemical testing for Canavan and Gaucher is not sensitive enough to detect carriers, but DNA testing of Ashkenazi Jewish couples for Canavan disease can tell with over 97% certainty whether either or both parents is a carrier. The same is true for Gaucher disease.

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altered gene, is called preimplantation genetic diagnosis. It involves in-vitro fertilization using the couple's own eggs and sperm. The in-vitro fertilization is then followed by an analysis of the DNA of the newly formed embryos, and only those embryos determined not to be affected are implanted in the woman. Finally, couples may choose to take a 25% risk of bearing a child with TSD without any prior prenatal intervention.

The decision a carrier-carrier couple makes depends on many factors. For example, would it make a difference to your decision-making if you were both carriers of Gaucher disease (a non-neurological treatable disease) as opposed to Tay-Sachs disease (a neurological, untreatable disease)? For which diseases might you consider prenatal diagnosis and terminating an affected pregnancy? For which diseases might you choose not to terminate an affected pregnancy? Would it matter if there were an experimental treatment for the disease in question?

Clearly these are very difficult questions. Different couples will make different decisions depending on their religious beliefs, moral values, cultural background, family dynamics and belief-systems, access to health care, and/or personal values.

III. What are some of the larger issues facing the community around carrier screening?

Some of the ethical principles adhered to in all good carrier screening programs to date have been that participation should be voluntary; each person being tested should give his/her informed consent; the results of all genetic screening tests should remain confidential; and there should be equal access to information and services for all at risk.

Are there situations in which these principles should be breached? For example, would it ever be justifiable for a health insurance company to force couples at risk to be tested? Would it ever be justifiable for a health insurance company to force carrier-couples to undergo prenatal diagnosis or to deny medical insurance or coverage to any affected children of a known carrier couple?

Case 2. An Ashkenazi Jewish woman (Mrs. B) meets with a genetic counselor to discuss her concern for the rampant incidence of breast cancer in her family history. Her mother was diagnosed with breast cancer at 37, ovarian cancer at 41 and died at age 42. Her maternal aunt who had breast cancer at age 45 is now 55 years old and doing well. In addition, Mrs. B's maternal grandmother and maternal great aunt both had breast cancer in their 30's. Mrs. B, now 35 years old and approaching the age of her mother's initial diagnosis is convinced it is only a matter of time before the family curse falls upon her. There is no doubt in her mind that she too will develop breast cancer within the next couple of years. Her two daughters (ages 13 and 15) are the same ages Mrs. B was when her mother went through the harrowing experience. Mrs. B wants to understand her options. She has read about genetic testing and is interested in what the process entails. She desperately hopes to prevent history from repeating itself both for herself and for her daughters.

I. What information would Ms. B need before deciding whether to be tested or not?

The most common form of cancer in American women is breast cancer. There are approximately 180,000 new cases of breast cancer a year. Women in the general population have a cumulative lifetime risk of 12% of getting breast cancer and approximately 1-2% of getting ovarian cancer. Only 7% of breast and 10% of ovarian cancers are due to a genetic or inherited predisposition.

Today two genes are known to account for about 75% of breast and ovarian cancer due to a genetic or inherited predisposition. When one of these two genes, BRCA1 or BRCA2 have a mutation or alteration, they are associated with an increased risk for breast and ovarian cancer. Everyone has two copies of each of these genes, one from the mother and the other from the father. When they function normally, these genes produce a protein which suppresses unnecessary cell growth. If one of the genes has an inherited mutation and is therefore non-functioning and the other copy becomes inactivated during the individual's life, the effect of both alterations or "hits" triggers cancer. When a parent has one of these mutated genes, his/her children each have a 50% chance of inheriting the alteration as well. Carrying the mutated gene increases a woman's risk of breast cancer from 12% to as high as 87% and the risk of ovarian cancer from 1-2% to about 40-60%.

These alterations can occur at hundreds of different sites along the BRCA1 and BRCA2 genes. Three particular mutations have been found to be prevalent in the Ashkenazi Jewish population. On the BRCA1 gene the two mutations are called 185delAG and 5382insC. On the BRCA2 gene the mutation is 6174delT. These three mutations account for about 90% of BRCA1 and BRCA2 associated familial breast and ovarian cancer among the Ashkenazi Jews. This means that when there appears to be hereditary breast and/or ovarian cancer in an Ashkenazi Jewish family history, the family is likely to have one of these three mutations.

Genetic testing is available today for families of Ashkenazi Jewish descent that exhibit a probability of carrying one of the BRCA1 or BRCA2 mutations. This form of DNA based testing is mostly being done under a research protocol although testing is also available commercially. Although the process involves a "simple" blood test, the ramification and significance of such a test is extremely complicated. Preferably, a member of the family who is affected with breast or ovarian cancer is tested first. A small blood sample is drawn. Only the 3 specific sites on the genes are examined to determine whether there is an alteration. A positive test result in an affected individual reveals that there is indeed a mutation in the family and other members may wish to discuss their options with an experienced healthcare provider.

II. What are some of the most common questions asked by someone like Ms. B?

A. How does one know whether a family's history of breast and/or ovarian cancer is indicative of an inherited predisposition to cancer or not?

Without a DNA based genetic test, one can never be 100% sure that a family history of breast and/or ovarian cancer is inherited or not. However, there are several features in a family history that would help evaluate an individual's risk and help determine whether testing for a mutation is advisable.

- 1) Several members affected with breast cancer particularly if at an early age of onset (<45).
- 2) Some may have bilateral breast cancer (both breasts).
- 3) There might also be occurrences of ovarian cancer.
- 4) The disease would be seen in multiple generations.

B. Since testing requires a "simple" blood test, why is it perceived to be such a complicated process?

All family members considering BRCA1 and BRCA2 testing should have counseling both before and after testing by professionals who are knowledgeable in the implications of such results. Before testing is done, it is imperative to discuss how an individual would proceed differently if she had a positive result as well as the potential psychological impact of knowing her status. After getting test results, it is helpful to clarify with the individual how she plans to proceed.

A positive result in an affected individual opens Pandora's box. The affected member now knows that she is at an increased risk of having a second cancer. Her family is now known to carry the mutation for familial breast/ovarian cancer. What begins as an individual choice to know his/her genetic status now becomes a family matter. There may be differences of opinions as to who gets tested. All the members have the option of learning whether they carry the family mutation. A positive test result in an unaffected woman predisposes her to getting cancer but does not mean cancer will definitely occur.

Negative results need to be interpreted with caution. If the affected individual tests negative for the three mutations, it is not necessarily an indication that the family does not carry another mutation that predisposes them to cancer. There may be another less common or unknown mutation in the BRCA1 and BRCA2 genes that was not looked for in this particular genetic test. Or, there may be yet another gene that we don't or can't test for at this time. Unlike Huntington's disease, a negative test result is no assurance that one will not develop cancer. A negative test result may leave the family with a sense of freedom from cancer when in fact they would still be at the general population risk of getting breast cancer. They should continue their screening protocol as advised by their medical professionals.

In some families, receiving a positive or negative test result may have psychological sequelae as well. Predicting how people will react to learning about the presence of genetic mutations in their families is difficult. Women who have had cancer may remember their own diagnosis and treatment. Relationships with mothers, sisters, or other female relatives who had breast or ovarian

cancer may intensify. Individuals may be concerned for their current medical care and future health. They may experience anxiety, sleeplessness, or depression. Women may have guilt over the possibility they might have passed the mutated gene down to their daughters and thus exposed them to an increased susceptibility to breast and ovarian cancer. Efforts to communicate with other family members about the availability of new information may be frustrating. Consultation with a genetic counselor or other trained professional may be helpful in dealing with the variety of feelings that may arise from genetic testing.

C. What options exist for those found to carry an altered BRCA1 or BRCA2 gene?

Knowing their risk for breast and ovarian cancer individuals can make better-informed decisions about their healthcare. Monthly self-breast exams, bi-annual clinical exams and annual mammograms maximize early detection of breast cancer. Some physicians recommend using preventative measures by taking Tamoxifen, a drug which has been shown to decrease an affected woman's risk of getting a recurring breast cancer and an unaffected woman's risk of getting breast cancer. Raloxifene is a recently approved drug to treat osteoporosis which is currently being studied to see if it also reduces the risk of breast cancer. A more aggressive approach is for a woman to undergo a prophylactic mastectomy (having breasts surgically removed). This approach significantly reduces but does not eliminate the risk of getting breast cancer.

Ovarian cancer is more difficult to detect in early stages but consistent surveillance is helpful. This may include annual pelvic exams, bi-annual trans-vaginal ultrasounds and specific blood tests. Oral contraceptives have been shown to reduce the risk of ovarian cancer. As with breast cancer, a more aggressive, preventative choice is to have a prophylactic oophorectomy (having ovaries surgically removed).

Lifestyle changes should be encouraged. Components that would be helpful in reducing risk for breast cancer are diet and exercise. The American Cancer Society's dietary guidelines include a diet which is low in fat and meat and high in fruits, vegetables and fiber. Although there is no conclusive data to support these guidelines, there are proven benefits of a low fat diet.

D. Should one be concerned about discrimination from insurance companies?

Confidentiality of test results regarding genetic predisposition to breast and ovarian cancer is a major concern to patients and healthcare providers. Third parties including those providing health, life and disability insurance can require disclosure of this information and use it in underwriting decisions. Less than half the states have laws restricting the use of genetic information by insurers in underwriting decisions. It is not clear that even existing laws fully protect the individual. There is real concern that knowledge of a genetic predisposition to breast and/or ovarian cancer may compromise a person's ability to obtain or continue insurance coverage. It is advisable to use caution, especially when it comes to paying for genetic testing, until there is better legislation protecting individuals from abuse of genetic information by insurers.

Case 3. A 28 year old married woman (Mrs. H) asks her physician to arrange for her to be tested for Huntington's disease, the disease her father recently died from at the age of 55. Neither she nor her identical twin sister currently show any signs of this neurological disorder, one which causes a progressive loss of motor control and is often accompanied by psychiatric problems such as dementia and/or affective disorder. Most individuals with Huntington's disease die within five to ten years after symptoms first appear. Since Huntington's disease is inherited as an autosomal dominant genetic disorder where a single copy of the altered gene is enough to give the full-blown disease, the woman and her identical twin each have a 50% chance of having inherited the gene for the disease.

A very accurate DNA test for Huntington's disease exists and it can predict, with 100% certainty, whether an asymptomatic individual such as Mrs. H. will eventually develop the disease or not - though it cannot predict when the person will develop the disease or lead to any treatments that will ameliorate the course of the disease. For these reasons the test for Huntington's disease is referred to as a 'presymptomatic diagnostic test.'

Mrs. H wants to find out if she has the so-called Huntington's disease gene so she can decide how to plan her life and whether she and her new husband should plan a family. The physician believes this is a reasonable request and refers Mrs. H to a genetic counselor for pre-test information and counseling.

I. What are some of the issues that Ms. H needs to think about?

A. What does she perceive as the advantages and disadvantages of finding out whether she carries the gene for Huntington's or not? How might it affect her life if she finds out she does have the Huntington's disease gene? Would she quit her job? assume a more reckless lifestyle? make plans for her future care? decide not to have children?

If you were Mrs. H would you want to be tested? If you were to test positive, would you refrain from having children since each would have a 50% chance of inheriting the disease? Would you choose to have prenatal diagnosis and terminate any affected pregnancy? Would you have children regardless of the results of the DNA test, knowing that each child could lead a full life - at least until symptoms of Huntington's disease appear?

B. Who should be told of her desire to be tested and informed of the results of her test? Should her employer or health insurer have access to this information?

C. If the results of her test for Huntington's are disclosed to Mrs. H's employer or HMO, are there ways whereby Mrs. H, who is healthy and completely asymptomatic, can be protected from genetic discrimination (i.e. the use of genetic information alone to discriminate against someone)?

D. How does she deal with the fact that her twin sister does not want to be tested? Since Mrs. H and her sister are identical twins, Mrs. H's results will automatically provide her sister with information she does not want to know. Does Mrs. H view her "right to know" more important than her sister's "right not to know"?

These three cases illustrate just some of the issues raised by the "new genetics." Geneticists and genetic counselors can help educate consumers about this complex genetic information, facilitate informed decision-making about genetic testing options and provide support to those grappling with unexpected (or unwanted) test outcomes.

The Ethics of Genetic Testing: Some Family Implications

Rabbi Jordan Parr

In April 1998, our lives changed forever. My wife, Cynthia, called me to say that she had finally gone to see her doctor about a ridge under her left breast. He immediately sent her to the radiologist for a mammogram. We had suspected – and denied – the worst for some time; now, it was clear: my wife had breast cancer. We spent the next few days meeting with doctors and laying out her course of treatment. She would first have a modified radical mastectomy, followed by a summer of chemotherapy and a fall highlighted by a stem cell transplant. Finally, her winter would consist of radiation treatments. Following this year of hell, we would just have to sit back and see if it all worked. As of today, she's doing fine. We thank God daily for this miracle in our lives.

During the course of Cynthia's treatment, and continuing even to this day, she began to do extensive research on the subject of genetic causes of breast cancer and she has also researched her extended family tree. To the latter point she discovered that several members of her father's extended family had contracted breast cancer; some died of the disease – and some of these relatives were men! There were also relatives on her mother's side who also had contracted breast cancer. She was certain that she fell into the genetic-based cancer group due to her family history. We knew then that a relapse was not only possible, it was very likely. Consequently, Cynthia decided to undergo genetic testing for the BRAC-A and BRAC-B genes.

One of the requirements to take the test is to undergo genetic counseling. By the time Cynthia went to Emory University for her counseling testing, she had done even more research on genetic testing, knew the risks and was determined to be tested. (Following her session, the genetic testing counselor even asked her to speak to her medical students about breast cancer and genetic testing!) The test involved drawing a small amount of blood and sending it to a specific lab for the testing. The genetic counselor told her that she had a 57% chance of having the gene. She returned home to Augusta and awaited the results.

Much to our surprise, Cynthia tested negative! Her breast cancer was not genetically based; its etiology was unknown. She immediately phoned her mother and sisters to tell them the good news; had she been positive, they too would have had to be tested – even though none of them had ever exhibited any symptoms of breast cancer. They need only to continue with their annual examinations and mammograms.

Had Cynthia tested positive, we would still have discussed the results of the genetic testing with our daughters. We would have encouraged our daughters to marry and have children of their own. The reasons include our faith in medical science that medicine will continue to progress and eventually be able to reduce the morbidity and mortality rates. Also, our Jewish tradition teaches us to have faith in God – and if God has commanded us to be "fruitful and multiply," than multiply we shall! By the time our children come of age, we are confident that breast cancer – and other cancers as well – will be curable.

We need then to distinguish between statistical probabilities and our own individual situations. If we depend solely upon statistics, nobody would ever want to bear children! Indeed, as the genetic revolution spreads, we hope to discover more and more treatments and cures for diseases that just this past year was a killer. We cannot mortgage the future upon the futilities of today. Indeed, life-threatening illnesses eventually will be treated with

little pills – just as the last century's killers were contained via research, antibiotics, vaccines and improved public health.

Genetic testing is indeed a "brave, new world." With the completion of the human genome project, scientists are beginning to apply the knowledge gained to treat diseases once thought treatable. For example, a stem cell transplant is possible only because of the development of a drug called Nupagen, a genetically engineered drug that stimulates the growth of immature red blood cells (the so-called stem cells) in a person's bone marrow. The bone marrow overproduces these stem cells and releases them into the bloodstream. The patient's blood is then "skimmed" for these stem cells and then the blood is returned to the body through a process called pheresis. Nupagen therefore has obviated the need for a doctor to tap into the bone marrow to harvest these cells, saving the patient a tremendous amount of pain.

In time, genetically engineered medicines will be available that will target breast cancer cells without destroying surrounding healthy tissue. The side effects of chemotherapy will dissipate and breast cancer will be treated as a chronic illness instead of being a life-threatening emergency.

In Deuteronomy we read, "Choose life so that you and your children may live." Genetic testing for breast cancer is a life affirming choice; it protects the health of the patient – and her family. Certainly Cynthia's mother and sisters are at increased risk for breast cancer but they are also able to take more proactive steps to deal with it, steps such as mammograms and self-examinations. How much the more they would have appreciated knowing that they might be at risk for developing genetically based breast cancer! Knowing that the breast cancer genes do not run in their family allows these three sisters, their daughters and their parents, to sleep at night. While there are no guarantees for the future, at least the statistics are now slightly more in their favors.

Jordan Parr is the rabbi of Congregation Children of Israel, Augusta, GA

Alert: FD, A Grave Jewish Inherited Disease by Sheila Peltzer

I'm glad our parents are gone. The tragedy that has struck our family would have killed them. In the 1970's they *kvelled* as they passed the Torah from generation to generation at their grandsons' bar mitvahs. Today we know we are passing on something else, something deadly.

Familial Dysautonomia, or FD, is a grave Jewish genetic disorder. It is also called Riley-Day syndrome after the two pediatricians who first described it in 1949.

Our son David's third child, Sammy, had problems from the moment of his breech birth in October 1997. His club foot was a minor one. He couldn't nurse well, and he was hospitalized with dehydration shortly after the *bris* where his physician father performed his circumcision, a *mitzvah*, in a temple filled with family and friends. Little Sammy was in and out of North Carolina hospitals, including the university of North Carolina at Chapel Hill, the first six months of his precarious life, seeing respected specialists in pediatrics, neurology, and genetics. They knew both his parents were Jewish, but none could pinpoint his problem. Meanwhile, my 83-year old mother, the last of our parents, prayed that God would take her and spare Sammy. God did.

When Sonia became pregnant again, she and David had a most difficult discussion about abortion. Again they went to specialists. Knowing both parents were descendants of Askenazim, Jews of Central Eastern Europe, they did amniocentesis and other testing. No problems, they afterward declared.

And so Sarah Hannah was born three minutes before midnight, December 31, 1998. She was named after my mother Anne. But she, too, had difficulty nursing. When she was three months old and still not holding up her head, Sonia, also a physician (but no longer practicing), realized that Sarah and Sammy had the same disorder, and it had to be genetic. She researched the Internet and diagnosed them with Familial Dysautonomia. They had all the symptoms: eating and breathing problems, hypotonia (lack of muscle tone), no tears, diminished feelings of pain (a protector), excessive sweating, and a smooth tongue with few tastebuds. She and David brought the two little ones to New York University where the world specialist in FD confirmed Sonia's diagnosis.

Sarah is now 1 ½ and can sit up by herself. She is a gorgeous, giggling girl. But she has a permanent feeding tube and frequent seizures. An oxygen tank stands ready. Sammy, now 2 ½, is Mr. Personality. He is also a breathholder. HE can crawl and soon may be able to walk. He's sharp as a tack and wants to do EVERYTHING his older siblings, Ben and Rachel, do, including roller skate. That he did recently while holding tightly to his mommy's encouraging hands. He, too, now has a permanent feeding tube - but he still loves munching hot dogs and anything chocolate.

FD is chronic and progressive. In the past, these children usually did not make it to adulthood, but some have lived into their 40's and 50's. There is hope with gene therapy and research. For this much, money is needed. Meanwhile, Sammy and Sarah are blessed with loving physician parents, adoring siblings, exceedingly helpful grandparents and friends, extraordinary therapists, and countless prayers. My husband and I will soon be moving to Charlotte from the Washington DC area, where we have lived for thirty years, so we can better help in emergency situations.

This November our niece Alison will marry Alex, a Russian Jew. They will be tested for FD before they have children. In Israel, this is done automatically along with Tay-Sachs testing. Both disorders have the same carrier rate, 1 in 30. In the United States FD testing is done ONLY if it is already identified within the family. Yet 1 in 3600 children born to two Askenazi parents will have FD.

This disorder is not rare. It is just rarely diagnosed. Had you ever heard of it before? Neither had our family or their specialists. To learn more, you may want to check out the Website at www.Fdvillage.org. Please help spread the word to the medical community and the Jewish community about Familial Dysautonomia. If not, this silent killer will continue to be passed from generation to generation.

FD GENE DISCOVERED!



*"I need eye drops every ten minutes" • "I eat and drink through a tube in my stomach" • "I can't go to school without my nurse"
 "I have permanent lung damage from pneumonia" • "I often faint when my blood pressure fluctuates" • "I don't feel pain when I hurt myself"*

These Children Were Born With
FAMILIAL DYSAUTONOMIA
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Raising A Child Profoundly Affected With FD

Barbara Berg

There are certain aspects to FD common to almost every person with this confounding illness—the sudden and sharp swings in blood pressure and temperature that would send anyone off balance, corneas unprotected by tears, a reduced sensation to pain and temperature and, of course, susceptibility to life threatening pneumonias.

Then again, there are so many aspects to FD that differ dramatically from one person to the next. One FD patient is bright, with articulate speech, relatively normal gait, vocationally successful, married with children; another FD patient is so profoundly stricken by the disease, non-ambulatory, chronically often acutely ill with limited communication skills and minimal ability to swallow food or saliva. And, then, there are those whose abilities and disabilities fall somewhere between the two extremes. During the infancy of a person with FD, no one can say for sure how bad or good things will be.

In this study guide you will read an article by a person with FD, and you will understand the life perspective of a person mildly affected with the disease. Unfortunately, our story is about a child at the other end of the spectrum—a child profoundly affected both with FD and with a related secondary disorder. By recounting the story of our lives over the last six years and our own personal struggles with FD, we hope to serve a higher purpose. That is to educate carriers of this disease who are planning a family.

The birth of our first child began on a remarkably upbeat note. Zachary, our son, was born with enormous blue eyes and with hair so shockingly red that nurses would crowd around, cooing at one of the most beautiful babies in the hospital. “How does it feel to have a clone of yourself?” our pediatrician asked Eric, Zack’s dad.

But for all his physical beauty and resemblance to his father, Zachary it turns out was not blessed with good health. For no sooner had we removed him from the delivery room did Zack begin to have problems. Despite perfect prenatal tests and an 8/9 Apgar score at birth, Zack developed immediate respiratory problems, had low muscle tone, and sucked poorly.

Zack also happened to have jaundice, I his mom, brought him to my hospital room for the very first time three days after birth. I had heard that the sun on his skin would help resolve the jaundice. So I stripped him and put him in front of my sunny window. When I returned him to the nursery I was scolded by the nurse. His temperature had dropped to 94/95 degrees!! He was freezing. I burst into tears thinking it was my fault.

But no one on staff from the neonatologist to the neurologist could figure out why there were these problems. He was sent home.

Things went downhill from there. Breastfeeding was impossible and even bottle feeding went badly. He could actually sleep through the night without food.

"Colic," said his pediatrician when day after day Zack became increasingly pale, limp, thin and sickly looking. "Why does his skin get red and blotchy?" I asked. "Normal for newborns," said his doc. "Why is he so pale and bluish around his eyes when he sleeps?" I asked. "Fair-skinned red heads are pale," he said reassuringly.

At three weeks old, a lactation therapist told us that Zack had an "ineffective" suck. He needed therapy. At four weeks old I noticed Zack seemed temporarily congested after a feeding; then he developed a fever after exposure to steam. An on-call MD said to bring him in to the ER. "Mom," she said, "bring a suitcase."

Zack was diagnosed with pneumonia. The pediatrician visiting us at the hospital said, "feed him as much as possible." Against my better judgement, I did as I was told. I watched the oximeter registering Zack's oxygen. After feeding, it began to dip. I ran for a hospital MD. I was told to leave the room. Zack was resuscitated and brought to the ICU. No more food. Food, it seemed was killing him.

The pneumonia developed because Zack was refluxing and aspirating food into his lungs.

The neurologist and director of the pediatric intensive care unit tested Zack from head to foot for 10 days. No food, just IV fluids. Zack cried constantly.

Then one day a light bulb went off, so to speak. "Are you (the parents) both Jewish?" Yes. "Does Zachary cry with tears yet?" No. Does he have taste buds? His tongue seemed smooth.

Dr. Felicia Axelrod was called in from NYU Hospital to check to see if Zack had this very very RARE disease, Familial Dysautonomia. Unlikely, we were told. Let's check to rule it out. And why not have the WORLD EXPERT, a friend of the PICU Director-why not have her check it out to be sure?

One of us sat motionless and the other cried as Dr. Axelrod tested Zack for the disease. But Zack had no tears. He had no taste buds. He felt no peripheral pain. He had no knee reflex. He failed a histamine test and for whatever else he was tested. We were told that Zack had a 50/50 chance of surviving to age 30. And then he was whisked away to NYU Hospital for his first question.

Dr. Axelrod and her nurse, Dena Berlin, were amazing. Night and day, they seemed to live with us. Zachary's surgeon, Dr. Ginsburg, was a life saver. Dr. Ginsburg operated on Zack's esophagus so that he would not reflux; not vomit. Zack had a gastrostomy tube put in his stomach which protruded outside his body so that we could feed him all night with baby formula; this by way of a pump. We learned how to feed him by mouth, safely.

During those 31 long days of hospitalization while Zack was virtually held and gazed at constantly he never returned a gaze. Autism, we worried. Impossible—he can't possibly have two horrendous diseases.

We took Zack home to a beautiful nursery which now included a tank of oxygen, a feeding pump, an apnea monitor, a suction machine, a nebulizer, syringes, tubes, medications, part-time nurses and doctors orders. We could take Zack out of the hospital but the hospital came home with us.

We met other parents with children with FD and in fact became very close with one couple whose daughter is mildly to moderately affected with FD. Now, almost 7 years after Dr. Axelrod introduced us we still speak on the phone daily for support.

Zack grew so much he actually became fat! He started to smile, play, meet gazes, sign, sit stand and cruise along furniture. But Zack, like many children with FD suffers from (vomiting) "crises". While he cannot vomit due to the surgery on his esophagus, he does have chronic and acute bouts with nausea, retching, hypertension, and peculiar symptoms which are unique to FD crises. The suffering from crisis is profound and like epileptic seizures comes on with sudden force and that literally knocks Zack to the ground.

Zachary, like many children with FD, is treated with tranquilizers/anticonvulsants and blood pressure medication. During infancy, Zachary woke up almost every day retching. And our first response to his awakening was administration of rectal valium. Some days he retched all day, some days he was fine. But sick or well, Zack seemed less and less interested in being touched. This is not typical of FD.

At age 2 our roller coaster took another turn. Zack began losing cognitive and social skills. He lost interest in people and toys. He began laughing inappropriately. All he wanted was the TV computer.

We took Zack to a neurologist for an evaluation. Pervasive Developmental Disorder—an autistic-like syndrome was diagnosed. We remembered those early signs that we dismissed—averted gaze, unwillingness to mold when held, etc., etc.

We thought that we had handled the FD diagnosis with great strength and resolve. Despite moments of intense grief and anger our family pulled together. Both Eric and I continued to work outside the home. We had help from nurses. We socialized as often as we could and went on with our lives. Another disorder, however related it was to FD seemed again to be too much to bear.

Dr. Axelrod says that approximately 1% of her active patients have both FD and autism. Five known people in the world with these two disorders and our beautiful baby had to be one of them.

It would be untruthful to say that Zack has a good life. The fact is, our son spends much of his life in agony. He sees the pediatrician at least once or twice a month for difficult to

diagnose crises, viruses, infections. Zack has had 5 operations and 10 or 11 hospitalizations. This little boy is only 6 years old.

So how do we get through the day? We rely upon our son's strength. When he is well, he laughs so hard he actually faints. We give him oxygen to help him deal with excitement. After a fainting spell or a crisis, Zack pulls himself up to a stand again. And so do we.

Zachary has taught us that what we take for granted—namely drinking, talking, walking, enjoying delicious food, using the bathroom without retching or fainting should never be taken for granted. Imagine being a Jewish parent, of all things, and feeding your child. Then imagine that the nourishment that you provide and that he experiences results in acute suffering instead of pleasure.

We and indeed all parents of children with FD whether mildly, moderately or severely affected are in awe of these people. Zachary's teachers and therapists adore him. He seems so proud of his accomplishments and so are they. These young people with FD, who developed this wretched illness through no fault of their own, continually amaze us with their determination, their optimism, their kindness, their sweetness and their raw courage. Even our own son, so limited in what he can do, continues to dumbstruck us with his resiliency and successes.

When Zack was 4 years old we were told that there was very little chance that he would walk. He began walking at age 5, not steadily but with countless falls; in our eyes, however, -he walks brilliantly! Zack learned how to use a touchscreen computer at age 2 years old. After 4 years, we dismissed the likelihood of his having the fine motor skills to use a mouse or the cognitive skills to learn the letters of a keyboard. After accidentally pulling the entire computer monitor onto him and shattering the touch screen, he— with his usual perseverance spent, the next week learning how to use a mouse. And, Zack is beginning to differentiate the letters of the alphabet.

We have another child. She is healthy, bright and beautiful. She is a very helpful and compassionate child. She befriends others and appears to be oblivious of their abilities, disabilities, racial differences and similarities. She was in therapy for a short while to deal with her intense anger about her brother and life. After all, how many of her friends have experienced once what she experiences every day? Now at age 3 she is asking: "Is Zack's disease gone yet?" "No" we say. "But the pneumonia's gone, right?" yes. And, then innocently, she wonders aloud: "Mommy, daddy, is Zachy going to die?"

There will be better treatment and a cure in the future. We hope our son will live long enough to benefit from research on FD. He is so precious and special. We cannot imagine our life without him. Having this brave little man in our family, we believe we must do all we can to nurture him. This much is clear, however: you must be prepared and trained to deal with FD if that is the road you take. FD is dumbfounding and life threatening every step of the way.

From: FD Dysautonomia Foundation Inc.

My name is Lori, I attend the University of Cincinnati. My hair is blonde, sometimes sun bleached, and sometimes beauty salon bleached! I am studying Early Childhood Education, live in a dormitory, and hate the food service! This all sounds very normal and easy, but if you have Familial Dysautonomia, a genetic disease that affects the normal function of the autonomic nervous system, none of this is easy. In fact, to have gotten to this stage in my life was not easy at all. I was asked to write a paper by the FD Foundation describing, "How it feels to grow up with Dysautonomia." I know it was very difficult to live with a chronic illness, but I always has so much help from my parents, that it was not until I was living on my own, finally really taking care of myself, that I realized how difficult it was. My parents always made all the final decisions on what I should do and not do to keep myself healthy and functioning. When I moved into the dorm and had to make the decisions for myself, sometimes I made the right decisions and sometimes I made the wrong decisions. If I made the wrong decisions I would have to pay for them by calling up my parents and going home where I could have extra health care from my family. Becoming really sick with a vomiting crisis from not hydrating myself well, or not getting enough rest, or not taking my pills at the right time, I have learned is not worth it. Staying in and not going out with friends because I was too weak, and dizzy from low blood pressure, where I am so off balance I cannot walk down the hall is not worth it either. I have learned that I have to be more in tune with my body in order to stay well. I have to concentrate on my health more than anything else. My health comes first, so that I can have a normal life.

Not being diagnosed until I was 5 years old, my parents raised me as normal kid who had a lot of episodes of pneumonia. After continuous hospitalizations, I was finally diagnosed and sent up to New York to meet Dr. Axelrod. From that day on my parents have carefully monitored my health so that I could stay as healthy as possible. Even with such great care I have had very serious hospitalizations, some lasting as long as six months. I spent more time in the hospital in fifth grade than I did in the classroom. That was a very difficult time in my life. Another difficult time in my life was in the summer of sixth grade after spinal surgery for scoliosis. Everything was set up and carefully planned so that nothing would go wrong, and of course, everything went wrong. This time I almost died they tell me. For some strange reason I started bleeding at home and my parents had to rush me to the hospital. What a mess! But I'm still here thanks to the great care from all my doctors and Cincinnati Children's Hospital. After all that, I had just the normal FD problems of fluctuating blood pressure, pneumonia, broken bones that could not mend, etc. etc.

I have always studied very hard, had good grades and wanted to go to college. In my senior year I applied to a very good liberal arts school near Cincinnati. They had an excellent learning disability program, and it was a perfect match. I was so excited! I was going to live in the dorm, be on my own, and have a great life! The first week of orientation I came down with a terrible pneumonia. I couldn't seem to get well. I was on all kinds of antibiotics, and nothing seemed to work. I was too ill for my parents to send

me to school, too ill to be at home. I had to be admitted to the hospital. I was there for over a month. I was very sick and in intensive care for the entire time. I still wanted to go to college. I really tried to make it, but it was so far into the semester by then, and it was such a long hard drive there everyday. I was not well enough to stay in the dorm. It was impossible. I lost my first year of school, but I didn't lose my life. My parents and I battle to keep my lungs healthy all year. It was weekly visits to the hospital and to many specialists. I finally went to New York so that Dr. Axelrod could help me. And she did. Finally I got my health back, chose better college for myself, and started life over again. The first year my mom drove me everyday to college and brought me home every night. I did very well academically and earned the right to live in th dorm this year. It's hard, but it's worth it.

My career goals have been influenced by my lifetime experiences with my illness of Familial Dysautonomia. I am studying to be a pre-school teacher with a sub-specialty in disabilities in the young child. I want to work with young children who have health problems and physical disabilities. Because of my illness, I see these children who have health problems differently than other young adults. I have an empathy that comes with my experience in dealing with assorted health problems all my life. When I am working with these children, I usually like to get to know them as a person first, before I get to know their disability. I treat them the same way I want to be treated myself, and that is to not be judged by my health problems. I want to give them strength and hope for their futures as I have tremendous strength and hope for my own future life. I want to teach them the gift of laughter, to be able to make light about so many of the hard knocks they will have to endure. I have always felt that if you can face up the problem it isn't always so bad. I look forward to every day as a challenge and always look for something good and funny in th day. My life would have been a lot easier if I wouldn't have had FD, but these are the cards that were dealt to me, and I have learned to make the best of them with the help of my wonderful family, friends and fabulous doctors.

Screening Jews and Genes: A Consideration of the Ethics of Genetic Screening Within the Jewish Community: Challenges and Responses

MARK LEVIN

ABSTRACT

Screening for genetic disorders, particularly Tay-Sachs Disease, has been traditionally welcome by the Jewish community. I review the history of genetic screening among Jews and the views from the Jewish tradition on the subject, and then discuss ethical challenges of screening and the impact of historical memories upon future acceptance of screening programs. Some rational principles to guide future design of genetic screening programs among Jews are proposed.

INTRODUCTION

Genetic screening is the systematic search within a particular population for persons of certain genotypes. This search can generate from a proband; i.e., an individual affected with a specific genetic condition, and be directed to testing of relatives or it can be undertaken for purposes of research or improvement of health. Screening can be performed at birth, thus directing intervention at an early age and preventing mental or physical retardation. An example of a widely accepted and performed newborn screening is screening for phenylketonuria. Carrier screening identifies heterozygotes for a serious, usually recessive disease. The purpose of such screening is to prevent births of children affected by the disease. Prenatal screening aims to identify genetic disease in the as yet unborn fetus to provide the parent with information necessary to make reproductive decisions that may include abortion, *in vitro* treatment, initiation of treatment at birth, or a decision to "allow the nature to run its course." Finally population screening is directed to a population at risk to identify and treat cases of disease and provide genetic counseling and intervention and/or to define carrier rates and prevalence (Scriver and Clow, 1980).

There are many ethical issues that arise in the course of design of a screening program, identification of affected individuals, performance of testing, provision of genetic counseling and selection of treatments or interventions. These include concerns for stigmatization, exposure of nonpaternity (i.e., of the fact that the father of the child is someone other than the pre-

sumed father), protection of confidentiality, the issue of coercion, how to ensure informed consent for testing or to provide adequate genetic counseling, issues of beneficence to screened individuals versus community's good, equity and justice/fairness, and avoiding harm by stimulating anxiety (Rowley, 1984; Rothenberg, 1997).

The ethical issues are particularly stark and come into a uniquely sharp focus when the diseases to which screening is directed are particularly prevalent in a well-defined community or when they are popularly perceived to be restricted to a particular ethnic group or population. In such situations, cultural, religious, and social mores of the target population stand out in particular relief in interplaying with ethical issues. The population in question may be particularly sensitive to questions of stigmatization and discrimination by the virtue of its unique historic experience, possess mores and ethical or religious beliefs that are unique and may be at variance with those of the screeners and researchers, or be particularly socially sensitive to specific social issues that are raised by screening programs. In addition, the emotionally charged and historically discredited, but still influential, idea of eugenics can throw its shadow over the whole setting.

Since the early 1970s, mass screenings have been repeatedly carried out among the Jewish population. Unlike the experience of mass screening for sickle cell that was essentially rejected by the African American community, Tay-Sachs Disease (TSD) screening has generally been successful. This disease, however, is only one of many diseases that are now known to be partic-

ularly prevalent among Jews, particularly Ashkenazi Jews, who are of Eastern European descent. It is estimated that 1 in 4 to 1 in 5 Ashkenazi Jews carries a mutation for one of the so called "Jewish" genetic diseases. With the additional description of BRCA1 and BRCA2 mutations and the inherited familial non-polyposis colon gene mutation, a backlash has developed within the Jewish community. One frequently hears the sentiment that the exemplary cooperation of the Jewish community with genetic researchers has exposed it to the danger of stigmatization as a community of "risky" individuals, and that it, in some way, validates Nazi views on racial purity, at least in some minds (Lehrman, 1997; Nelson, 1998). The memories have been awakened and the ugly specter of Nazi medicine has reared its head.

My goal is to briefly explore the history of screening efforts within the Jewish community, focusing especially on TSD, as the best studied model, and to explore the factors that make Jews unique as a community. This exercise can then guide us in designing a rational approach to screening programs in this population. I propose modifications to the design of screening programs to take unique Jewish cultural and religious determinants into account and to make an attempt to particularize common approaches for use within the Jewish Community.

AN OVERVIEW OF SCREENING PROGRAMS IN THE JEWISH COMMUNITY

Tay-Sachs disease was first observed in 1881 by W. Tay, and subsequently described by B. Sachs, a New York neurologist (Kolodny, 1979). A community screening program aimed at detection of TSD carriers was established in the Baltimore-greater Washington, D.C., area as soon as technically feasible, and has served as a model for more than 60 programs in five countries, including the United States, Canada, Great Britain, Israel, South Africa, as well as Europe, and Australia. By 1992 a cumulative total of nearly 1 million young adults have been tested throughout the world. More than 36,000 heterozygotes have been identified and 1,056 couples have been found to be at risk for TSD in their offspring. A total of 2,516 pregnancies at increased risk for TSD have been monitored by amniocentesis or chorionic villae sampling, and 469 affected fetuses were identified leading to 451 abortions (Kabatck *et al.*, 1992).

Although these results could be considered an unqualified success, a number of facts that evoke concern become evident. Persons identified as carriers of TSD did not always understand the meaning or implication of being a carrier. The psychological burden of being labeled a carrier was considerable, and in cases where testing was carried out before marriage, there were a few instances where the couples broke up their engagements (Goodman, 1984). Carriers of TSD disease appear to hold the least optimistic view of their future health compared with control noncarriers, although their perception of current health was no different (Martean *et al.*, 1992). Although not reported for TSD screening, experience from Greece demonstrates that possession of sickle cell trait does become a socially stigmatized status, even while not affecting carrier-to-carrier matings (Stamatoyannopoulos, 1974; Kennen and Schmidt, 1978). Our personal experience as well as the experience of those working

within the Orthodox Jewish communities is that this is a real concern and that stigmatization of carriers for purposes of marriage has occurred. Anxiety appears to be increased in identified carriers (Clark *et al.*, 1982; Zisman *et al.*, 1984). A number of questionnaire studies have identified that a majority of respondents believe that their status as carriers would affect their future social and reproductive behavior (Azulain *et al.*, 1981). Among high school students, nearly half of carriers felt "worried or depressed" (Hidelson, 1977). At the same time, a screening program may not increase knowledge or understanding of the disease even among college students (Krischer *et al.*, 1982). It should be noted that while the incidence of diminished self-image or anxiety among carriers is very low (10-19%), it is still much higher than the real risk of producing a child with TSD. In addition, it is reasonable to suppose that a rational screening program that minimizes anxiety can be designed without compromising its effectiveness.

THE JEWISH TRADITION ON GENETIC ISSUES

Jewish law has long ago recognized the genetic component of many illnesses. The sages of the Talmud have reported on the genetics of what is probably hemophilia and the possible genetic correlation of epilepsy (Talmud). Families that appear to transmit a hereditary illness should be avoided according to the advice of Jewish religious law. Although marriages within first cousins and between uncles and nieces are not prohibited, and may even be considered meritorious (Code of the Jewish Law), more recent authorities have cautioned to consider each case individually when genetic illness is present and may be uncovered by such matches.

Preserving confidentiality and truthfulness has been a concern of the responsa literature for hundreds of years. The very grave prohibitions against evil gossip have been discussed at length since Talmudic times and have been popularized a generation ago by Rabbi Israel Meir HaCohen, known as Chofetz Chaim, after the title of his work dealing with this topic. A number of foundations are active within the Orthodox community to promote knowledge and care in observance of these laws.

The Jewish approach to acquisition of knowledge to find the cure of human illness views research and development of new technologies as unequivocally positive. Jews, as well as other citizens of our world, are enjoined to "fill the earth and subdue it" (Genesis). This includes genetic research and treatment. Maimonides reflect the generally accepted wisdom when he writes in his *Introduction to the Commentary on the Mishna* that all that has been placed upon this earth was designed for Mankind's benefit, and, in the words of King David: "the heavens are God's heavens, but the earth He has given to sons of men" (Psalms). It is axiomatic that there exists license to heal and that efforts to cure illness are not considered a usurpation of God's unique sovereignty. In fact, the physician is obligated to care for the sick, and is therefore obligated to obtain knowledge that will make this praiseworthy endeavor possible (Bleich, 1981). In Judaism, human life is of supreme importance and has been granted by the Creator. Every individual is created in the image of God, and every individual, not only physicians, has been entrusted with the responsibility to preserve and care for it.

ETHICS, GENE SCREENS IN JEWS

Therapeutic genetic engineering and gene therapy that can evade tests from obtaining genetic knowledge is not included in the prohibition of mixing species (*Leviticus*) and, in and of itself, have positive value and should be encouraged. Among the most prominent practical issues, however, that impact on attitudes to genetic screening, testing and intervention is that of abortion. Before we can discuss this central issue, the demographics and social and religious composition of the American Jewish needs to be considered.

What does Jewish medical ethics say about genetic screening that depends on where one stands religiously, socially, and culturally? We submit that those who work with the Jewish community must obtain some understanding of the parameters of this community, or more accurately, communities. It is a dogma of clinical medicine that no disease exists in a vacuum and that the knowledge of the patient is indispensable to finding the diagnosis, creating an appropriate treatment plan, and delivering care efficiently and efficaciously. The same is true when we care for communities.

The Jewish people are unique in that they are both a nation and a faith. Every Jew has some degree of commitment to the religious traditions of his people; maximal commitment to Halacha (religious law) if he or she is orthodox and a more measured and considered commitment to the values of religious law and tradition if he or she is Conservative, Reform, or unaffiliated. Many of the physicians who design and carry on screening programs are Jewish and are consciously or unconsciously influenced by the values of their tradition.

Religious attitudes of American Jews are diverse and reflect the diversity of their origins, as well as differing cultural and religious background. Secular Jews affirm their ethnic identity as Jews and view themselves as a part of the Jewish people, but do not see themselves as religious, and do not religiously affiliate. This group may comprise as much as 45% of the American Jewish population and would likely make their ethical decisions on the basis of prevailing community standards. Orthodox Jews are committed to the Halacha, or Jewish law, which is case based, comprehensive, and all embracing and sees as its subject not only matters of ritual and religious practice, but also ethical, moral, societal, and interpersonal matters. It is casuistic and case based. While in principle, individual decisions should be derivable from the mass of precedent, text, and tradition by using time-hallowed and well-defined rules, unanimity is certainly not a given and considerable range of rulings on any individual issue is common. Conservative Judaism sees itself as faithful to the Halacha, but through an historic approach, seeing Halacha as developing in response to the challenges of each age. It accepts modifications of Halacha by common practice and through the process of interaction with secular culture and prevailing values. Most conservative Jews do not overly concern themselves with the details of conservative Halacha as interpreted by the Assembly of Conservative Rabbis, the supreme Halachic authority of this movement. Reform Judaism rejects the authority of Halacha, but feels itself indebted to the tradition in its moral and ethical aspects and in terms of its customs and patterns of worship. As a religious movement it stresses commitment to prophetic ethics and social responsibility. The Central Conference of American Rabbis, the rabbinical organ of the movement, does have a Responsa Committee that reports on ethical issues presented for adjudication.

These decisions, however, are not binding on any individual Reform Jew.

The approach to Halacha, impacts crucially on the stand of abortion and, therefore, on the attitude toward genetic screening program.

ABORTION

The Orthodox see abortion not as a purely medical procedure, but as an act essentially subject to religious stricture. Two views predominate. The first is that abortion is an act of murder that could only be sanctioned for the preservation of the mother's life. It must be noted that in Judaism one life may not be sacrificed to save another life; however, the fetus who threatens his or her mother's life is considered to be a pursuer and to be in some way analogous to a murderer pursuing a victim. The victim can then be saved at the expense of the life of pursuer. The medieval proponents of this view, in particular Maimonides, met with great difficulties in reconciling their approach with binding precedential law as presented in Tannaitic (approximately 100 B.C.-A.D. 300) and Amoraic (A.D. 300-A.D. 600) sources. It is quite clear from those sources that causing a miscarriage is subject to monetary compensation rather than corporal punishment as would be the case for murder. The problem that occupied subsequent scholars is quite basic. Maimonides allows aborting the fetus to save mother's life only as long as the fetus remains inside. Once the head is delivered, "we do not sacrifice one life to save another." The principle of saving the mother at the expense of the pursuer should not allow such a distinction. Feldman quotes no less than 13 attempts to explain this discrepancy (Feldman, 1998a). The second view as expressed by medieval scholars other than Maimonides is that abortion cannot be equated with murder but is undesirable for other reasons: "It diminishes G-d's image," it is a particular case of the general prohibition against "destruction of the seed," or *omium*, or it may be forbidden as unwarranted injury to mother or fetus (Feldman, 1998b). In latter reasoning, man's body and life is given by the Creator and is subject to His laws. Therefore, one cannot cause self-injury, except as sanctioned by religious law. It is self-evident that the value of avoiding self-injury or other factors enumerated above is fairly low in the hierarchy of positive values, and that sparing the mother's physical well-being and even her mental and emotional equilibrium might provide sufficient sanction for abortion. In Feldman's words: "The first (approach) sees any abortion as 'akin to homicide,' and therefore permissible only in cases of corresponding gravity, such as saving the life of the mother. It then builds down from this strict position to embrace a broader interpretation of life-saving situations, which include a threat to health, for example, as a threat to her life. The other viewpoint . . . assumes no real prohibition against abortion at any time, except perhaps during the most advanced stage of pregnancy, and builds up from this lenient position to safeguard against indiscriminate abortion" (Feldman, 1998b).

At the same time, it must be noted that the voluminous literature so briefly summarized by us here, while well known in Rabbinic circles, remains largely unfamiliar to Orthodox laymen who tend to consider abortion as being akin to murder. This state of affairs may be attributable to the influence of Rabbi

Moses Feinstein's enunciation of the former view (Feinstein, undated). Rabbi Feinstein (died 1983) was widely accepted to be the most prominent Halachic authority in North America (Bleich, 1977).

The disapproval of abortion as *a priori* an acceptable solution of personal or societal problems has negatively influenced the Orthodox attitudes towards screening of carriers, as well as prenatal screening. The Association of Orthodox Jewish Scientists (AOJS) issued a statement in 1973 indicating its unalterable opposition to amniocentesis, the natural and logical consequence of which may be abortion. "The Association feels that screening of married couples or those with marriages imminent and who are not committed to disruption of their mutual marital commitment, were both partners discovered to be Tay-Sachs carriers, is unwise, again because virtually the only consequences would be abortion or a childless marriage" (Rosner, 1976). The only genetic screening program that has come out from within the Orthodox community, the Dor Yeshorim Committee, was initially conceived along the lines of conventional screening programs. As such it was presented to Rabbi Moses Feinstein 1974 and was disapproved for reasons similar to those expressed by the AOJS. In consequence, consultations were held with rabbinic and community leaders and a unique program was designed. The following represent basic components of this program as presented by Rabbi Josef Eckstein, the founder and president of the Dor Yeshorim, at the conference on Genetic Diseases in the Jewish Community at Brookdale University Hospital and Medical Center on October 21, 1998.

Dor Yeshorim: The Committee for Prevention of Jewish Genetic Diseases was founded by Rabbi Josef Eckstein in 1974, after he lost four of his first five children to TSD. Although initially designed as a typical screening program, his initial efforts met with strong opposition from Rabbis, community leaders, and affected families. They felt that the focus on the population of married or pregnant individuals was inappropriate because of concerns that it may lead to indiscriminate abortions. There was also great disquiet about discrimination against relatives and families of affected children, and the psychological stress that could be caused to newly discovered carriers just prior to or at the point of marriage. The revised program was deemed acceptable and a circular supportive of the Dor Yeshorim concept as newly formulated was signed by Rabbi Feinstein and a number of other well known Rabbinic leaders. The program was novel in that it concentrated on voluntary and anonymous testing and had as its target population high school and seminary students, a group in which marriage was not imminent, thus reducing stress and anxiety. The parents of minor children signed consent forms and no names were recorded. Thus, complete anonymity was protected. Once marriage was contemplated, the tested individuals were to call the Dor Yeshorim office and to provide the date of birth and the assigned identification number. If both provided numbers represented a potential marriage of two noncarriers or a carrier and a noncarrier, they are told that they are compatible for purposes of marriage. If noncompatibility was identified, counseling was to be offered.

Laboratories were enrolled in a quality-control program. All data was entered by two different personnel and was entered twice and computer checked for consistency. Blind samples as

laboratories. When compatible results were obtained, the couple was invited to have blood redrawn and retested, and, if confirmed, individual counseling was offered. In 1993 screening for cystic fibrosis was added, and in 1995 Canavan disease and Fanconi anemia type C were added.

Currently the program tests 8,000 new participants annually. To December 1997, 80,000 individuals were screened for TSD, and 46,450 were screened for cystic fibrosis, whereas 33,820 were screened for Canavan disease. A number of prevalence and carrier incidence studies have been performed.

The program design avoids stigmatization and anxiety, and incorporates Orthodox concerns about abortion. It limits the provision of genetic counseling to "incompatible" couples, thus conserving the scarce resource of genetic counseling by directing it to those who most need it.

CONSERVATIVE AND REFORM VIEWS OF ABORTION

The Conservative authorities build upon the most liberal opinions of the past as enunciated in the previous section and incorporate contemporary ethical opinions. "Under approval of the Israeli law, abortion is permitted if carried out at a recognized medical institution with the woman's approval and according to one or more following criteria: if the birth would endanger the woman's life or injure her physical or emotional health; if it can be determined that the child would be born either physically or mentally handicapped; if the pregnancy was the result of rape, incestuous relationship, or intercourse outside of marriage; if the woman's age is below 16 or over 40" (Gordis, 1978). Although most Conservative thinkers oppose the idea of abortion on demand, they do not share the Orthodox' visceral distrust and disapproval of abortion and do not oppose common screening programs. A significant minority of Conservative thinkers contends that there is, in fact, no such thing as a specifically Jewish view of abortion and, that seen through the prism of the Conservative approach, number of equally valid positions can be taken.

Reform Judaism believes that abortion should be available under such circumstances as threatening disease, deformity of the embryo or fetus, threats to the physical and mental health of the mother, rape, and incest. In addition, social, economic, and psychological factors may warrant therapeutic termination of pregnancy. Considering abortion on demand, Reform Judaism recommends that an individual must consult her own conscience (Baskin, 1983). This is likewise consistent with the deeply held conviction that eschews dogma and rejects monolithic approaches. Basic to both the Conservative and Reform sensibilities is commitment to egalitarianism and reliance on individual responsibility. Culturally and socially, Conservative and Reform Jews are fully Americanized and share the values of the surrounding popular culture. Many of the assumptions integral to the Dor Yeshorim type of program remain foreign to their sensibilities.

It is possible to generalize the prevailing views regarding abortion as follows: the Orthodox generally disapprove of abortion, although in practice may permit it in certain cases. An individualized case decision in consultation with the couple's or woman's rabbi would be advised. There is, however, an un-

ETHICS, GENE SCREENS IN JEWS

deriving distrust and a great deal of concern about promoting abortion as a convenient tool to solve society's problems. This opposition spills over into the attitudes toward the design of screening trials and into prenatal or premarital setting. Programs such as Dor Yeshorim appear to be quite effective when targeted to the Orthodox population. Basic to this acceptance is involvement of the community and respect for community standards. Support by the grassroots results in an ongoing effort that becomes incorporated into the fabric of communal life and into communal habits and mores related to marriage and procreation. This approach has worked both in the United States and Israel (Broide *et al.*, 1993); however, attempts to generalize it to the non-Orthodox communities, who do not share the Orthodox' opposition to abortion, have generally failed. When options entitled Scheme A, *i.e.*, a Dor Yeshorim-like program, and Scheme B, individual testing and notification with availability of genetic counseling and religious counseling, if desired, were offered to the entire Jewish community of Sydney, Australia, there was a marked preference for Scheme B. Only 10% of clients, selected to enroll in Scheme A, and a third of those subsequently, changed to Scheme B. There were serious reservations about Scheme B expressed by the general Jewish medical and religious community. The leaders of the community declined to endorse Scheme B, and without their support, access to Jewish day schools and synagogues for testing was denied. This resulted in few members of the Orthodox Jewish community being tested under Scheme B. There was also an expressed concern that two separate genetic programs artificially separated the Sydney Jewish community into two separate genetic testing pools with unnecessarily divisive effects. As a result, a modified scheme was devised that presented Scheme A as the default, with individuals able to specifically opt for Scheme B. This strategy was endorsed by all leaders of the Sydney Jewish community (Barnett *et al.*, 1995).

"EUGENICS AND TAINTED BLOOD"

As already discussed, consideration of genetic health of potential marriage partners has been a feature of Jewish communal life for many generations. This must be understood on the background of the great value that the Jews have traditionally placed on the home and family life. That children must survive to carry on the traditions of a persecuted and maligned minority is a vital attitude in the conditions of a difficult and threatening exile.

At the same time, eugenics as a community planning or political control tool has not been a part of the Jewish experience, except in so far as the Jews have been victims of such practices, most recently as targets of Nazi genocide and racial pseudoscience of the Third Reich. Since the middle ages, the myth of the "diseased Jew" has been a part of European Christian mythology. As early as the 1200s, blood libels included speculation that Jews normally possessed a demonic physical form, and only by ingesting Christian blood, could they assume normal human shape. With the rise of scientific mindset in Europe of the 19th and 20th centuries, these myths permuted into what later came to be known as "scientific pseudoscience." Jewish feet were thought to be flatter than Gentile feet (thus disqualifying Jewish men as soldiers and, therefore, citizens), in a trans-

parent analogy with devil's hoofs. Jewish gait was said to be different than that of Aryans, abnormal gait being associated with end-stage syphilis in the popular mind. Charts of nose shapes, head shapes, and physiognomic comparisons to "The African look" abounded in the scientific literature of the times (Zoloth-Dorfman, 1998). These unfortunate misrepresentations served as the incubator for the "Final Solution of the Jewish Problem."

Although the Jewish community has almost uniformly welcomed and supported the initial programs of genetic screening and genetic research, the accumulation of scientific and media reports of "Jewish Genetic Diseases" over the past several years has created such uneasiness. As a people and as a community, Jews certainly do not wish to revive the discredited racial theories of Nazi Germany. While undoubtedly all ethnic and religious communities contain their share of "bad genes," by providing a fertile field for genetic research, by cooperating with investigations in the metropolitan areas where Jews are disproportionately represented, and by providing the cadre of researchers, community activists, and physicians who focus on the Jewish community, have we not collaborated in being done a disservice? On one hand, the Jewish community can be proud of its record of support for research and its role in pushing the field of genetic screening and research forward, and thus contributing to general good. As has occurred with BRC 1 and BRC 2, new knowledge fairly quickly allows identification of specific mutations in other ethnic communities and populations, and moves the field forward beyond its focus on Ashkenazi Jews. On the other hand, until the field does move on, a whole number of undesired consequences accrue. These include stigmatization of the Jewish community, decrease of the fertility rate through an increase of general anxiety among adolescents and young adults of marriageable age, legitimizing the search for genetic partners outside of the Jewish community, and misdirection of scarce communal resources on projects that are, at best, of peripheral value to the community.

Of the researchers we must ask the following questions: Are you comfortable with the focus on a specific ethnic community? Do you utilize or sanction the use of scare tactics to enroll patients in your studies? Several examples of the use of cultural stereotypes to fix the image of the Jewish population as an inbred group have been cited in the Hastings Report (Goodman, 1982). Do you design your programs with sensitivity to the values and mores of the communities which you study? Do your programs help individuals within the community or do they exploit the communities' goodwill and high regard for scientific endeavors to their detriment? Above all, do you do good rather than harm?

SOME PROPOSALS FOR RATIONAL DESIGN OF SCREENING PROGRAMS WITHIN THE JEWISH COMMUNITY

As we have seen, designing a community-friendly, sensitive, scientifically rational, and ultimately beneficial screening program for "Jewish genetic diseases," is complicated and precarious. One must deal with the contentious nature of the issues, fragmentation and absence of universally accepted guidelines, religious and cultural concerns, and above all, the dark shadow

of history. We propose the following principles that can guide development of such programs.

1. A screening program for "Jewish genetic diseases" must be sensitive to the values and norms of the communities in which it is to take place and it must be designed to benefit these communities, rather than as pure research. To this end, consultation with community leaders, rabbis, activists, and prominent individuals should be carried out as programs are planned. This will enable the creation of an organic community-based program and minimize subsequent friction. It will also put solid ground under the efforts of the screeners and researchers.
2. The concerns of the Orthodox community are quite unique. The successful screening programs within the Orthodox community have come out of the grassroots and incorporate many unique features, as we have discussed. To succeed, there must be consultation with rabbinic and community leaders on every aspect of a screening program. While taking this approach is certainly more difficult and complex than utilizing existing models, such programs, when successful, can become an integral part of social and even religious life of Orthodox communities. Once established, they may obtain the imprimatur of rabbinic authority and become self sufficient and self propagating. The prospective contribution of a program of this kind can be long term and may persist for generations.
3. At the same time, many Jews of all religious persuasions may consider the Dor Yeshorim model as a sole community program to be foreign to their sensibilities and to be unnecessarily divisive. The Sydney experience may be instructive in this regard. We may need to consider unified programs for the entire Jewish community but incorporate subprograms (called Program A and Program B in the Sydney effort) that will enable all Jews to participate in a screening program under one umbrella.
4. We must not forget that the largest single block of Jews are the unaffiliated. This sizable minority cannot be reached through traditional communal institutions such as synagogues, social service organizations, and educational institutions. The use of media channels to reach this large group appears to be warranted, provided, appropriate sensitivity to the concerns of other groups and care to avoid stereotyping and creation of anxiety is maintained.
5. Screening programs within the Jewish community should not be formatted as an exclusively Jewish effort. BRCA research, for example, needs to be directed to high risk groups (among which Jews may be prominent), rather than uniquely to Ashkenazi Jews. Use of stereotypes and creation of anxiety as a means of motivating individuals to undergo screening must be avoided. All literature and procedures must be sensitive to giving substance to misconceptions and biases that may threaten the very people that we aim to help. The price of such insensitivity may not be only a failure of a particular screening program but loss of cooperation and support from the general Jewish community, support that has heretofore been taken for granted.

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Received for publication January 22, 1999; accepted April 20, 1999.

Survey of Recent Halakhic Periodical Literature

GENETIC SCREENING

1. THE PURSUIT OF SCIENCE

Commenting upon the verse "In the six hundredth year of Noah's life . . . all the fountains of the great deep opened up and the windows of heaven were opened" (*Genesis* 7:11), the *Zohar* declares that in the latter part of the sixth millennium the gates of wisdom will open on high and fountains of wisdom will open below. This phenomenon is depicted as preparation for the seventh millennium. When the sun begins its declension on the latter part of the sixth day a person begins to ready himself to welcome the approaching Sabbath. So also during the latter part of the sixth millennium does the world begin to prepare itself for the approaching seventh millennium that marks the advent of the eschatological era.

The genome project involving the identification of every one of the approximately 100,000 genes in the human body represents a major scientific accomplishment and its eventual completion, anticipated to occur in 2003, is to be heralded as a providential milestone in the ongoing revelation of the mysteries of the universe. Unlocking the secrets of the natural order serves as a harbinger of the messianic era. Precisely how mapping human chromosomes and identifying the function of individual genes will effect health and life expectancy is not yet known. For that matter, the eschatological import of those discoveries is not at all contingent upon any resultant therapeutic benefit. The *Zohar* makes no mention of the pragmatic effects of the scientific revelations of the sixth millennium. Perfection of the universe lies in the opening of the "gates of Heaven" and in showering pure scientific wisdom upon mankind.

It is instructive to read the statement of the *Zohar* side by side with Rambam's elucidation of the *misvab* of "And you shall love the Lord

This material was originally presented in a different form at a symposium on "Modern Medicine and Jewish Law," sponsored by Maimonides Medical Center, Brooklyn, NY, on February 16, 1999.

your God" (Deuteronomy 6:5) as formulated in *Hilkhot Yesodei ha-Torah* 2:2. For Rambam, "love" and "knowledge" are synonymous terms. The commandment "And you shall love the Lord your God" as well as the commandment "the Lord your God you shall fear" (Deuteronomy 6:13) are fulfilled by acquiring knowledge of God in the only way that man can know God, *vis.*, through His wondrous works. Thus, mastery of the theoretical postulates of the pure sciences is not merely salutary; it is a *misrah*. As the secrets of physics, chemistry and the life sciences are unraveled, the mystery of creation is better understood; correspondingly, the knowledge—and hence love—of God becomes more intense. The *Zohar* must be understood as teaching that the eschatological era cannot commence until man discovers all that is discoverable in the realm of science, until man comprehends as many of the secrets of nature as are comprehensible to the human intellect and until he grasps as much of the divine blueprint for creation as he is capable of apprehending.

2. PARTICIPATION IN GENETIC RESEARCH

The identification of BRCA1 and BRCA2 is but one small, but hardly insignificant, piece of the cosmic jigsaw puzzle. Their discovery is undoubtedly part of the divine providential plan and hence of the divine mandate.

During the course of the past several years a question has been raised in some circles: Should Jews allow themselves to become subjects of genetic studies designed to further understanding of hereditary or genetic traits prevalent in the Jewish population? In light of the foregoing, the answer must be a clear and resounding yes. Such studies are to be enthusiastically welcomed even if they yield no therapeutic benefit whatsoever for the simple reason that their contribution to understanding *hokhmah ha-Shem* is incontrovertible. Of course there is every reason to hope—and to pray—that the theoretical knowledge gleaned in such studies will eventually lead to practical therapeutic benefits.

By virtue of scientifically valid considerations, Jews constitute an excellent population group for studies of this nature. Jews, much more so than most ethnic groups, have preserved a homogeneous genotype over a period of millennia. To be sure, Jews are not unique in this respect. Geneticists have recently come to realize that virtually the entire indigenous population of Iceland is descended from a small band of ninth- and tenth-century Norse settlers and a few early Irish slaves and hence the inhabitants of that relatively isolated island share a

unique genotype.³ That Icelanders have preserved a unique genotype is an accident of geography; in the Jewish community this phenomenon has occurred by design and should be a badge of pride.

Thus it is not surprising that there do exist so-called Jewish genetic diseases, including Tay-Sachs, Gaucher disease and Niemann-Pick disease, to name the most widely known maladies affecting Ashkenazic Jews. Those diseases are by no means limited to Jews, although their rate of incidence is markedly higher among Jews than among others. For that matter, genetic mutations responsible for breast cancer are found among other ethnic groups as well.⁴ Many ethnic groups manifest a higher incidence of other diseases, the best known of which is probably sickle-cell anemia in the Afro-American population. Undoubtedly, medical science will discover a multitude of genetic traits associated with a host of other diseases much in the same way that it has discovered genetic traits associated with breast and colon cancer.

Such phenomena should not give rise to ethnic self-consciousness. Every human being is a carrier of many genes that can result in defects in offspring. Given the totality of genetic defects, it is unlikely that any particular ethnic group of significant size carries a greater genetic burden than any other group. The sole difference is that in groups, such as Jews, whose gene pool is isogenic the risk for a particular disease can be assessed more accurately.

Even if much more information regarding genetic propensity becomes available than at present, it would be a gross error to conclude that Jews are somehow less healthy than others. Concern regarding participation in such studies born of a fear that detractors of Jews will point an accusatory finger and make such a claim should certainly not be a deterrent. As far as anti-Semites are concerned, such phenomena are not the cause of ill-will and disdain; they serve as excuses rather than as reasons. If such persons do not have one excuse they will find another. Moreover, what are the consequences of labeling Jews, whether correctly or falsely, as carriers of an inordinate number of negative genetic traits? The primary consequence would be that members of other ethnic groups will consider Jews to be undesirable as marriage partners. Such a result should not at all be regarded as a calamity, but as an undisguised and unmitigated blessing!

Mapping the genome, determining the function of specific genes and the linkage between a malady and a particular gene are in the realm of pure science. But when tests are available to determine whether or not a person carries a gene that predisposes him or her to a particular dis-

case, should that person avail himself or herself of the test? At that point the test is not necessary to advance the cause of science. Satisfaction of idle curiosity is certainly not a compelling reason to seek such information. The information may, however, be useful in a number of ways. If both parents possess the same defective gene it will be passed on to their offspring in accordance with Mendelian ratios. Assuming that the gene is not inexorably linked with a disease but is associated only with a higher propensity for a given disease, if both parents are carriers the probability of their progeny being affected rises dramatically. Depending upon the severity of the potential affliction, a person armed with this information might be well advised to exercise genetic prudence in selecting a spouse. More significantly, when such information is received, the carrier may be in a position to take prophylactic measures to avert the disease, to modify dietary or environmental factors that combine with genetic susceptibility to cause the disease or to seek early diagnosis in order to enhance the likelihood of effective therapy. Should a God-fearing Jew seek genetic information for any or all of those reasons or should he or she simply rely upon divine providence?

That issue is forthrightly addressed in a letter written by R. Moshe Feinstein in the early days of Tay-Sachs testing and now published in *Iggerot Moshak, Even ha-Ezer*, IV, no. 10. Rabbi Feinstein takes cognizance of the argument that a person ought to place his trust in God as reflected in Rashi's comment on *Deuteronomy* 18:13, "... and do not attempt to discern the future; rather, accept wholeheartedly whatever befalls you," only to dismiss it out of hand with the remark that, with the availability of a simple test to determine the carrier state, failure to undergo the test is tantamount "to closing [one's] eyes [in order not] to see that which it is possible to see." Rabbi Feinstein adds the caveat that, since "many people will not believe" the testimony of physicians declaring that the carrier state, in and of itself, is entirely innocuous and hence the carrier may be regarded as undesirable as a marriage partner, precautions should be taken to assure confidentiality. He also voices concern that, since "particularly in this country" many people suffer from "nerves" with the result that they erroneously perceive minor inconveniences as major problems and insignificant risks as inordinate hazards, genetic testing should not be conducted upon immature adolescents who are not yet of marriageable age.

Rabbi Feinstein's observation regarding limitations that must be placed upon simple trust in divine providence is unassailable. A person is certainly not entitled to cross a busy intersection without looking to

see if there is oncoming traffic. The Sages taught unequivocally that a person dare not rashly expose himself to danger.¹ In hazardous circumstances, turning a blind eye to danger is not an act of unquestioning faith but an act of rash conceit. Both knowledge of the genetic nature of disease as well as development of the technology to determine the genetic propensity for possible affliction are themselves the products of providential guardianship of man. Refusal to seek out available information is tantamount to the rejection of providential beneficence.

There is a well-known tale of a certain Jew who considered himself to be a great *ba'al bitabon*, a person who placed his trust solely in God and relied upon Him implicitly and unquestioningly. Once there were reports of anticipated torrential rains and resulting flooding. The *ba'al bitabon* was not at all concerned and went about his business as usual confident that God would preserve him from any misfortune. The rain came, the streets flooded and the water reached floor level. The authorities ordered an evacuation and dispatched flat-bed trucks to transport the inhabitants of the town to safety. A truck arrived at the home of the *ba'al bitabon* but he demurred declaring that since he has placed his trust in God no harm will befall him. The rain continued unabated and the water reached the second storey. The authorities sent a boat to search for any individuals who might have been overlooked in the earlier evacuation. They pleaded with the *ba'al bitabon* to come aboard the boat but he refused to do so declaring that in light of his tremendous faith it would be unthinkable that God might forsake him. The rain continued and the water rose higher and higher. The *ba'al bitabon* was forced to seek refuge on the roof. The authorities sent a helicopter to circle the city to determine if anyone had been left behind. The pilot spotted our *ba'al bitabon* and threw him a rope so that he might be hoisted into the helicopter. But the *ba'al bitabon* refused to be rescued insisting all the while that his faith rendered him impervious to danger. The water continued to rise and the *ba'al bitabon* soon drowned. Coming before the divine throne he waxed indignant: "How could You do this to me! After all, I was such a staunch *ba'al bitabon*. Why didn't you save me?" To which God replied: "Save you? I sent a truck; I sent a boat; and I sent a helicopter. What more did you want?"

The moral of the story is quite simple. Providence manifests itself through the natural order. God provides the wherewithal to satisfy human needs. Man retains freedom of the will and the autonomy either to accept or to reject that which God provides. *Bitabon* does not render genetic testing redundant.

3. TAY-SACHS

To the extent that it is based on fact, Rabbi Feinstein's caveat is also unexceptionable. Jewish law regards as inviolate the privacy of personal information that a person does not wish to disclose to others. Jewish law demands that confidences be respected not only by professionals with whom one has entered into a fiduciary relationship but also by friends and acquaintances and even strangers to whom such information has been imparted.⁵ *A fortiori*, information of a personal nature that may be used unjustly and irrationally to a person's detriment dare not be divulged. Nor should information that is likely to cause a person physical harm or emotional distress be imparted to that individual.

However, when the concern is with regard to the carrier state for Tay-Sachs disease one cannot fail to be taken aback by the discovery that such concern exists. As Rabbi Feinstein himself forthrightly acknowledges, a Tay-Sachs carrier is at absolutely no increased risk for any physical or mental disease or handicap. Nor, unless he marries another Tay-Sachs carrier, are his children exposed to the risk of anything worse than themselves being Tay-Sachs carriers. There are no scientific or rational grounds for a non-carrier to shun a Tay-Sachs carrier as a marriage partner or for any other form of social or economic discrimination. No scientist worthy of that appellation would lend credence to any such assertion. Since there is absolutely no physical or mental burden, either actual or potential, associated with the carrier state, discovery that one is a carrier should not bring psychological trauma in its wake. Any resultant trauma is entirely the product of misinformation.⁶

Why, then, is misinformation regarding the Tay-Sachs carrier state so widespread in our community? To our regret and harm, many persons who lack basic education in the sciences are lacking in even elementary knowledge with regard to genetics. They do not grasp the difference between dominant and recessive traits, cannot properly distinguish between incipient disease and propensity for disease, cannot distinguish between necessary causation and statistical probability and sometimes they do not even understand that the demonstrated absence of a defective gene in a child assures that the genetic disease or propensity has not been inherited.

What is the solution? The proper solution, the simplest solution, the solution with the most salutary cost-benefit ratio and certainly the most

enlightened solution, is education. The requisite information can readily be reduced to clear and concise language and disseminated both widely and repeatedly. Information saturation effectively dispels ignorance.

To their eternal credit, a number of sincere and self-sacrificing individuals have dedicated themselves to the eradication of Tay-Sachs disease as well as of a number of other genetic diseases prevalent in the Jewish community. They have indeed been markedly successful in achieving their objective. The system that has been instituted involves testing young men and women for the carrier state, but not revealing the results to the parties tested. Instead, the information is retained by the testing organization which, when called upon to do so, matches the results with those of a prospective marriage partner. If both are carriers, they are advised not to go forward with their marriage plans. If only one is a carrier, they are simply informed that there is no impediment to their marriage, but the results of the test are not divulged, because of a perception that there is a stigma and/or a psychological burden attached to knowing that one is a carrier. However, in refusing to divulge the results of genetic tests to either the young men and women affected or to their parents, a negative stereotype is dramatically reinforced. The hocus-pocus of assigning numbers and later announcing that the prospective marriage of the bearers of matched numbers will either be propitious or will not be propitious imbues the process with a Byzantine-like quality. Assuredly, refusal to test for the carrier state until announcement of an engagement is imminent takes a toll in psychological trauma during the waiting period, not to speak of heartache caused those forced to abandon wedding plans already formulated and to go their separate ways. The entire process confirms and reinforces a certain primitiveness and know-nothingism prevalent in certain sectors of our community.

Nor is the procedure cost effective. On the contrary, it is quite wasteful. The additional record keeping and the bureaucratic intermediaries represent an unnecessary expense. It is certainly simpler, less traumatic, less time-consuming and less costly to draw blood for a Tay-Sachs test in conjunction with a routine blood test performed by a pediatrician during childhood. Moreover, if neither parent is a Tay-Sachs carrier there is no way that any of their children can possibly be a carrier. It is certainly cheaper and more efficient to screen two adults, even if they are beyond child-bearing age, than to test each child of a union blessed with multiple offspring.

Paradoxically, it is precisely in the community that utilizes this service that the underlying problem could be dealt with most expeditiously.

Although arranged marriages are not the norm, arranged meetings between prospective marriage partners are very much the norm in those sectors of our community. Before the parties and their respective families agree to even an initial encounter much information is exchanged, some of it significant, much of it frivolous. Were genetic information deadmatized, such details could be exchanged with the same complete lack of reticence that accompanies, for example, disclosure of educational background, height or pulchritude.

4. BRCA

The advantages of Tay-Sachs testing are obvious; the advantages of screening for BRCA1 and BRCA2 are much less obvious. An individual who becomes aware that he or she is a Tay-Sachs carrier is on notice to ascertain that a prospective marriage partner is not a carrier as well. It has, however, been argued that there is no point in screening for the BRCA gene because, if a woman is found to carry a defective gene, either she will develop cancer or she will not, but there is nothing she can do to prevent the disease.

That, however, is simply not the case. There are indeed measures available that may either prevent the disease entirely or maximize the chance for cure. The most extreme option is a prophylactic bilateral mastectomy and/or removal of the ovaries.⁷ To state that the option is available is not to state that it is either medically or halakhically advisable. The information in the medical literature with regard to the statistical probability that such a procedure actually serves to increase longevity anticipation is somewhat equivocal. Strange as it may appear to the layman, there are respected medical authors who, at least in the past, suspected that the benefits are nil or, at best, marginal.⁸ Presumably, this is so, at least in part, because no mastectomy removes all mammary tissue.⁹ One recent retrospective study of both moderate and high-risk women with a family history of breast cancer who underwent prophylactic mastectomy found a statistically significant reduction in the incidence of breast cancer and death from breast cancer as compared with the expected incidence in women with a family history who did not undergo the procedure. The reduction in the risk of breast cancer was found to be in the neighborhood of 90 percent.¹⁰ It would be prudent for a woman who knows that she is a carrier to seek the advice of recognized experts¹¹ and to inform herself of the results of further studies that surely will be undertaken.

Halakhically, even if medically recommended, the procedure is certainly not mandatory, particularly since the surgery itself is not devoid of risk. Indeed, the surgery may be impermissible for that very reason. A number of rabbinic authorities have advanced the view that therapeutic measures carrying with them a hazard to life cannot be accepted by a person who, absent such treatment, enjoys a longevity anticipation of at least twelve months.¹² Such a person, those authorities argue, has no right to gamble the virtual certainty of twelve month survival for the doubtful prospect of an even longer life-span. Women who test positive for the BRCA gene but who are symptom-free certainly enjoy a longevity anticipation of years and even decades. On the other hand, the surgical risk might conceivably be regarded by some as within the parameters of "The Lord preserves the simple" (*Psalms* 116:6), i.e., a risk not commonly deemed onerous and hence halakhically acceptable. Those are issues that a woman prompted to consider such a radical measure should discuss first with her physician and then with a competent rabbinic decisor.¹³

Another form of treatment now under discussion is chemoprevention therapy involving use of tamoxifen and raloxifene in high-risk women as a prophylactic measure before the onset of disease. The crucial issue is the potential danger associated with the treatment. In one study tamoxifen was found to reduce the risk of invasive cancer by 49 percent during median follow-up of fifty-five months.¹⁴ However, tamoxifen is believed to increase the risk of uterine cancer significantly over a period of time.¹⁵ Although they are rare, tamoxifen has side effects, including venous thromboembolism, cataracts and, as already indicated, endometrial cancer. The higher a woman's risk of breast cancer, the more likely it is that the reduction in the incidence of breast cancer will outweigh other risks.¹⁶

Short of such draconian measures, there are other modalities of care that are available. Women who carry a BRCA1 or BRCA2 mutation will be advised to begin cancer monitoring practices at an earlier age than others and to engage in such monitoring practices at more frequent intervals than women in the general population. Gynecologists, following the recommendations of the National Cancer Institute¹⁷ and the American Cancer Society,¹⁸ now advise all women above the age of forty to have a mammogram annually. But carriers of the BRCA gene are advised to have annual mammograms at a much earlier age. While there is some question with regard to whether the annual procedure should commence at age twenty-five or at age thirty-five, all agree that early

sting is imperative.¹⁹ The argument that, since every woman can begin an annual mammogram at the age indicated for a woman at risk, no woman need be burdened by the knowledge that she is a carrier in order to protect herself in this manner is medically unsound. The effects of radiation are cumulative. Hence each exposure to radiation carries with some degree of risk. A responsible physician recommends exposure to x-rays only when the risk is medically warranted and always employs precautionary measures in order to minimize the risk to the extent that it is possible to do so. Although some physicians dismiss the risk as negligible, mammography for non-carriers is simply not medically prudent. Physicians discourage mammography at an earlier age in the absence of known risk factors because, due to their higher breast density, screening mammography in younger women yields a higher rate of false positive results which cause anxiety and unnecessary biopsies²⁰ and because they do not regard the benefit to be commensurate with the cost.²¹

Determination of the carrier state for the BRCA gene also may have significant implications for decisions regarding postmenopausal hormone-replacement therapy. Some studies suggest that postmenopausal hormone-replacement therapy decreases the risk of coronary heart disease and osteoporosis by as much as fifty percent, but increases the risk of breast cancer by thirty to forty percent.²² Since, for most women, the risks associated with coronary heart disease are much greater than those associated with breast cancer, most experts argue that the benefits of the treatment outweigh the risks.²³ However, the balance between the risks and benefits of hormone-replacement therapy may shift for women who are at increased risk for breast cancer. According to one study, hormone-replacement therapy may be contraindicated for women with a lifetime breast cancer risk above thirty percent.²⁴

Early detection by means of an annual mammogram beginning in young adulthood is one response to identification as a carrier. Annual gynecological ultrasounds and CA-125 tests for early diagnosis of ovarian cancer is another. Equally important are regular breast examinations carried out at six months intervals or even more frequently.²⁵ To be sure, breast examinations are non-invasive and risk-free. If so, why burden women with BRCA testing in order to encourage breast examination? Every woman simply undergo regular, routine breast examinations as frequently as is advisable for a known carrier. The answer is probably recorded in the annals of medical literature but is to be found in halakhic sources. In point of fact, it is well known that people are often diligent with regard to routine examinations. But more significantly, in a

matter requiring the care, concentration and diligence of a breast examination, the likelihood of missing something significant in the course of a routine examination or of erroneous dismissal of an abnormality as insignificant is quite real. A physician who knows his patient to be a BRCA carrier is likely to be much more vigilant in his examination and more cautious in his judgment.

That phenomenon is reflected in the remarks of R. Akiva Eger in a gloss commenting upon *Shabb, Yoreh De'ah* 1:5. *Shulhan Arukh, Yoreh De'ah* 1:3, rules that, although a ritual slaughterer must be proficient in the laws of ritual slaughter, one who has not mastered those laws may perform the act of slaughter provided that a person who is proficient in such matters observes the act of slaughter in its entirety from beginning to end and ascertains that it has been performed properly. Rema disagrees in part in ruling that, although an act of slaughter carried out under such circumstances is valid *post factum*, nevertheless, a person who is not proficient in the laws of slaughter should not be entrusted with performance of the act. *Shabb* modifies the impact of Rema's divergent ruling. *Shabb* fully agrees that unless there is a positive indication of the fact that a ritual slaughterer is proficient in the pertinent regulations the animal must be regarded as forbidden. Nevertheless, *Shabb* asserts that if it is not known whether or not the slaughterer is qualified in that manner, it is permissible even *ab initio* to entrust him with the act of slaughter provided that the act is supervised by a person known to be proficient. In effect, *Shabb* rules that, since the slaughterer may well be qualified and it is also likely that any error will be detected by the observer, those two factors combine to render the likelihood of irregularity sufficiently remote as to be below the threshold of halakhic concern.

R. Akiva Eger takes sharp issue with *Shabb's* determination. R. Akiva Eger points to an apparent discrepancy between two different rules: An act of slaughter performed by a minor or mentally deficient person under the supervision of a competent individual renders the animal permissible at least *post factum*. However, the act of a ritual slaughterer who is later found to be ignorant of information he was presumed to possess is invalid even if the act of slaughter was observed by a qualified person and nothing amiss was noted. The distinction, observes R. Akiva Eger, lies in a simple psychological phenomenon. A minor or mentally defective person is known to be incompetent and quite likely to err in performing the act of slaughter. Hence, the observer understands that he bears full responsibility for assuring the *kashrut* of the animal. Accordingly, he recognizes that he

must be extremely vigilant and must scrutinize the act of slaughter with total concentration. In contradistinction to that situation, a person observing a slaughterer whom he has no reason to assume to be ignorant or incompetent is likely to perform his task *pro forma* and not exercise the vigilance necessary to catch every possible error. For that reason, asserts R. Akiva Eger, when there is doubt with regard to a person's competence as a slaughterer one should not initially rely upon an observer to assure that the act has been performed properly. Although it may appear paradoxical, there is more reason to rely upon the observer when the slaughterer is known to be incompetent than when his competence is merely a matter of uncertainty.

The nature of the human psyche is such that constant vigilance is well nigh impossible. A physician who performs breast examinations routinely and repeatedly and who is well aware of the high statistical probability that any particular examination will result in innocuous findings is, on occasion, likely to be less than totally vigilant. Knowledge that the patient is at risk by virtue of a known carrier state will certainly prompt the physician both to be more attentive in his examination and more concerned in exercise of judgment. Although the BRCA carrier may have been known to be a member of a high-risk group even before testing for the carrier state was undertaken, the physician's vigilance is likely to be even greater when the patient is actually known to carry the BRCA gene.

But is there a halakhic obligation to undergo procedures designed to disclose evidence of a malignant disease—mammograms, breast examinations by a physician, self-examination and the like? And, if yes, is there an obligation to determine one's carrier status in order to make such diagnostic procedures more effective? Is every woman obliged to seek BRCA screening or are only members of high risk groups obliged to do so?⁴³

I suspect that the intuitive answer is that such obligations do exist. Citation of the verse "Ve-nishmartem me'od le-nafshoteikhem—And you shall be exceedingly watchful of your lives" (*Deuteronomy 4:15*) is virtually an automatic response. Somewhat curiously, in codifying the prohibition against engaging in hazardous conduct, Rambam, *Hilkhot Rozeah* 11:4, quotes an entirely different verse, "Rak hishamer lekha u-shamor nafshekha me'od—Only take heed to yourself and be exceedingly watchful of your life" (*Deuteronomy 4:9*).

The Gemara, *Berakhot* 32b, relates that a gentile government official came upon a pious Jew praying by the side of the road. The official took umbrage because the Jew did not interrupt his prayers in order to greet him. Emphasizing that he could readily have punished the Jew's

lack of courtesy with immediate death, the gentile addressed the Jew and chastised him for transgressing an admonition "written in your Torah" and proceeded to quote both *Deuteronomy 4:9* and *Deuteronomy 4:15*. The official was quite obviously taking the Jew to task for disregarding his own safety and well-being. Maharsha, in his commentary *ad locum*, points out that the gentile misapplied the verses he cited. Read literally, *Deuteronomy 4:9* is a general admonition not to transgress the commandments handed down at Sinai. Maharsha, however, observes that, as stated in *Avot* 3:8, the verse constitutes a prohibition against forgetting any aspect of Torah and that *Deuteronomy 4:15* is a prohibition against "believing in" or deifying any image.

Nevertheless, Rambam, apparently without the support of any other talmudic source, accepted the interpretation of *Deuteronomy 4:9* ascribed by the Gemara to the gentile as being entirely valid and as establishing a normative obligation. Rambam may well have accepted the similar interpretation of *Deuteronomy 4:15* to which the gentile gave voice as equally valid but omits reference to the second verse much in the same manner that in other instances he does not cite multiple verses reiterating a single commandment. Rambam may have cited *Deuteronomy 4:9* rather than *Deuteronomy 4:15* simply because it occurs earlier in Scripture. More likely, he recognized *Deuteronomy 4:15* as an admonition limited to fashioning graven images. To be sure, *Deuteronomy 4:9* also has a different meaning and commands the listener to take heed "lest you forget the things that you eyes saw and lest they depart from your heart all the days of your life." Understood literally, the term "neshesh" in each of those verses connotes "soul" rather than "life." Consistent with that meaning, the phrase "be exceedingly watchful of your soul" in *Deuteronomy 4:9* is a general exhortation not to disregard the commandments received at Sinai. In talmudic exegesis that verse serves as an admonition not to forget the Torah one has studied. Thus neither verse appears to command preservation of life or health. Nevertheless, perhaps because the term "neshesh" is a homonym connoting both "soul" and "body," Rambam understands *Deuteronomy 4:9*, since it is couched in general terms, as a commandment establishing an obligation to preserve health whereas *Deuteronomy 9:15* clearly has a different and very particular meaning.

The difficulty inherent in Rambam's position is compounded by a seeming inconsistency: Rambam does not cite *Deuteronomy 9:4* in his enumeration of the 613 precepts in the *Seder ha-Mitzvot*; nor, despite the title, *Hilkhot Rozeah u-Shemirat ha-Nefesh—Laws of Murder and*

ervation of Life—does Rambam list health among the *misvot* in the dnote indicating the commandments to be discussed in the ensuing ion of the *Mishnah Torah*.

Failure to categorize a halakhic prescription as a fulfillment of one of 613 biblical commandments in no way compromises its normative us. There are indeed innumerable biblical obligations that, for one ion or another, are not categorized among the 613 *misvot*. The obli- ion to protect one's health does, however, appear to be recognized by mbam as flowing from one of the 613 enumerated biblical command- nts. In introducing his regimen for healthful living, Rambam, *Hilkhot 'ot 4:1*, declares:

Since having a healthy and complete body is among the ways of God ecause it is impossible to understand or to know [any] matter pertain- ng to knowledge of the Creator if one is ill, therefore a person must stance himself from matters that destroy the body and conduct him- self in accordance with matters that promote health and cure.

Rambam regards a healthy body as a necessary condition for achieving knowledge of the Creator.²⁷ In *Hilkhot Yesodei ha-Torah 2:2* he lures knowledge to be a necessary condition for fulfillment of the commandment "And you shall love the Lord your God. . . ." Accord- to Rambam, love of God can be achieved only by means of contem- tion and reflection upon the wondrous nature of that which God ated. In *Hilkhot Yesodei ha-Torah 4:12* Rambam adds that love of d increases in a manner commensurate with enhanced understanding the nature of God's handiwork. The human mind is incapable of aging in meaningful intellectual pursuits while the body is racked by n and thus, for Rambam, avoidance of disease and promotion of ysical well-being are commanded as necessary measures to fulfill the *svab* of "And you shall love the Lord your God."

Rambam follows his opening statement in *Hilkhot De'ot 4:1* with a alled enumeration of rules for healthful living. It is clear that the pre- scriptions he offers are not intended to be exhaustive. Rambam's ployment of the phrase "*va-ulu bam*" does not constitute a limitation; is simply an indication of broad rules of general applicability. Other tters, particularly at other times and for some individuals, may be no s obligatory. Any medically indicated prophylactic or diagnostic proce- re must certainly be regarded as integral to the obligation posited by mbam. Delineation of what is medically prudent is certainly depend- t upon scientific knowledge at any particular time and is to be deter-

mined by members of the medical profession. Genetic testing, including testing for BRCA1 and BRCA2, should be regarded as halakhically mandated in circumstances in which medical science believes that the results are likely to affect treatment in a manner that will enhance longevity anticipation or well-being. Certainly, a person identified as being at risk for a specific disease is obligated to pursue all available measures in order to ward off the disease or to diagnose its presence while the disease is yet in an incipient stage and still amenable to cure.

5. DISCRIMINATION AGAINST CARRIERS

Prospective resistance to as yet unavailable genetic testing and already expressed opposition to BRCA testing which is more immediate is born of fear of discrimination, not in the sense of social stigma, but discrimination in employment and in the writing of insurance policies. Those concerns are economic and real. There is reason to fear that an employ- er who is aware that a prospective employee is at risk for a disease that will cause the employee to be absent from work or to become impeded in performing his duties will hire another applicant in his stead. Insur- ance companies will certainly wish to take into account the statistical probability of an applicant actually developing a malady for which he has a genetic propensity, both in determining eligibility for health and life insurance and for establishing premium rates for such policies. However, those fears are probably greatly exaggerated. As of 1998, laws have been enacted in over half the states to prohibit health insurance companies from requiring genetic testing as a condition of coverage or from denying coverage or charging higher rates based upon the results of a genetic test.²⁸ New York's Insurance Law § 4224, as well as the applicable law in eight other states,²⁹ requires that underwriting of both health and life insurance policies be based upon sound actuarial princi- ples. In New York, Insurance Law § 3234 places the same restriction upon discrimination in the underwriting of disability insurance. Similar statutes were enacted in eight other states.³⁰ New York Civil Rights Law § 296 and the laws of seventeen other states³¹ prohibit discrimination in employment on the basis of a genetic predisposition.

It would be necessary to research the applicable law in each of the other states in order to determine what protection against discrimina- tion in employment, if any, is available to genetic carriers in each of those jurisdictions. Fortunately, such a determination may not be neces-

sary. The federal Americans With Disabilities Act of 1990¹¹ prohibits discrimination against any person on the basis of a physical handicap. Fortunately, §706 of that act contains a definition of a physical handicap sufficiently broad in nature to encompass a genetic predisposition. Indeed, in 1995, the Office of Economic Opportunity issued a ruling confirming that interpretation of the statute and declared that the definition of disability includes individuals at risk for future health problems based on genetic abnormalities.¹² The federal statute is national in application and supersedes state law. However, the interpretation of the statute by the Equal Employment Opportunity Commission has not been tested in any court. Hence, at least at present, the Americans With Disabilities Act cannot be relied upon with certainty for protection against discrimination in employment.¹³

Despite what clearly appears to be the state of the law many people are either uninformed or skeptical. Concerns with regard to the impact of the results of genetic testing upon employability have been expressed repeatedly and quite forcefully not only in the popular press but also in scientific and medical journals. Those concerns are expressed even in jurisdictions in which state law unequivocally prohibits discrimination in employment. If people are concerned that there is a problem, there is a problem. Oft times the perception of a problem is itself the problem—and this is one of those times. What, then, is the solution? The medical community, the legal community and the rabbinic community, separately and in concert, must do whatever is necessary to remove any ambiguity in the law and/or in the mind of the public.¹⁴ They must also act to assure that health care coverage is available at affordable rates in all jurisdictions.

We now stand at the cusp of major breakthroughs in the field of genetics. The specter of discrimination, real or imagined, either in insurability or in employment will have a drastically chilling effect both upon availability of subjects for genetic research and for implementation of testing programs designed to preserve lives and to eliminate disease. Public policy dictates that impediments to achieving those benefits be eliminated. That can be accomplished only by establishing a level playing field in which, by operation of law, discovery of a genetic predisposition must be ignored insofar as negative economic consequences to carriers of defective genes are concerned.

Legislation can solve the substantive problems with regard to economic discrimination. Social discrimination, particularly discrimination in eligibility for selection as a marriage partner, cannot be addressed by legislation. There is no question that identification of a person as a carri-

er of, for example, the BRCA gene will cause serious *shiddukhim* problems not only for the woman so identified but for her children as well.¹⁵

The first of those problems is whether the carrier state, when ascertained, must be disclosed to a prospective marriage partner. An extreme case—and one in which the answer is obvious—is identification of an individual as a carrier of the gene responsible for Huntington's disease. The gene is dominant and lethal; the disease manifests itself at a comparatively young age and is both debilitating and terminal. It seems quite evident that disclosure of the fact that a prospective marriage partner harbors the gene is mandatory. In fact, it is even arguable that failure to disclose the carrier state for Huntington's disease constitutes a halakhic basis for annulment of the marriage. The certainty of premature interruption of normal marital life may constitute a serious physical defect of the magnitude of a *mum gadol*, i.e., a major defect, with the result that the marriage may be void *ab initio* on grounds of *hiddushbat ta'ut*, i.e., error in its inception.¹⁶

However, disclosure of the carrier state for a recessive gene that is deleterious or of a defective gene that may or may not lead to some type of physical disability is an entirely different matter.

The primary source for delineation of what information a third party must reveal to a person considering the eligibility of a marriage partner and what he dare not disclose is *Hafetz Haryim, Hilkhot Issurei Rekkhilut, klaf 9*. *Hafetz Haryim* distinguishes between two types of physical problems. One he calls a "holi"; the other, he terms a "meibush." A "holi" is defined by *Hafetz Haryim* as a malady or impediment that is likely to interfere with normal marital life. *Hafetz Haryim* declares that if the malady or impediment is of a gravity such that, if informed, the person in question is unlikely to agree to enter into the marriage, and provided that disclosure of such information is not accompanied by personal animus, disclosure of the condition or defect is mandatory. If, however, the physical problem is not of a degree of severity such that it is likely to impede marital life materially, it may not be disclosed by a third party. The term "meibush" may or may not be related etymologically to the term "hushush" which connotes suspicion or concern. Physical weakness, infirmity, vague aches and pains are matters of concern and may portend future illness that is serious in nature but such forms of malaise fail to constitute clinical evidence of an imminent physical impediment to marital life.

The precise degree of statistical probability of developing a serious illness that triggers an obligation of disclosure has not been pinpointed

by rabbinic scholars. At an earlier period in the investigation of the BRCA genes it was reported that the correlation between the presence of the defective gene and development of breast cancer was approximately 85%.⁴⁶ More recent reports suggest that carriers of the defective gene have a 55% risk of developing breast cancer over the course of a lifetime. It must be noted that it is the risk of developing breast cancer, not the mortality risk, that is estimated to be 55%.⁴⁷ The mortality risk, particularly if available diagnostic procedures are utilized to ensure early detection, is much lower.

In light of that information it is doubtful that any rabbinic authority would require, or even permit, a third party to disclose the BRCA carrier state. That, however, does not imply that a young lady should not disclose such information to a prospective fiancé at an appropriate time in their developing relationship. A successful marital relationship must be based upon a bedrock of mutual trust and openness. Concealing such information, even if halakhically justifiable, is unwise, to say the least.

Such advice might well lead to an unintended and unwarranted conclusion. If disclosure of a genetic defect is deemed necessary for any halakhic, ethical or pragmatic reason, then would it not be prudent to forego testing in the first place? After all, one cannot disclose what one does not know. If testing is not performed, the dilemma of whether to disclose or not to disclose will not arise. Ignorance may indeed be bliss.

Such a posture is unacceptable for two reasons. First, burying one's head in the sand does not cause the danger to disappear. The person who rejects testing procedures remains at risk. Secondly, at least insofar as members of high risk groups are concerned, the selfsame considerations that would compel disclosure of unwelcome information obtained as a result of genetic testing should require disclosure of membership in the high-risk group. The situation is analogous to that of a person who, while in the process of selling his automobile, hears strange noises under the hood. If he takes the car to a mechanic and the mechanic finds a defect in the motor he will have an absolute obligation to disclose that information to the purchaser. Would he be justified in avoiding a visit to his mechanic on the plea that the noise may well be but an innocuous rattle? Failure to disclose a defect that is serious enough to void the sale is forbidden.⁴⁸ It is far from certain that failure to disclose a defect of a lesser magnitude is halakhically defensible.⁴⁹ But, apart from the possibility of actual transgression, a person who keeps the knowledge of the noise to himself and proceeds with the sale is assuredly not a "*dover smet be-levkvo*," i.e., he is not a person

who "speaks the truth that is in his heart" (Psalms 15:2).⁵⁰ Full disclosure of all salient information, even when not absolutely mandated, represents the ethical norm Judaism seeks to promote. A member of a high-risk group who purposefully echews testing procedures in order to avoid becoming privy to information that must be disclosed is certainly not a *dover smet be-levkvo*.

The ultimate question, of course, is whether discovery of a genetic problem such as a defective BRCA gene should be permitted to influence marital decisions. When R. Iser Zalman Melzer, of blessed memory, was about to become engaged to his future wife the bride's family became aware of the fact that he was rather sickly. And so they went to the *Hafetz Haim*, not for a halakhic opinion, but for sage counsel. Should they go forward with the marriage or should they terminate the relationship? The *Hafetz Haim* responded by saying, "The *Ribbons shel Olam* bestows many blessings. It is He who bestows the blessing of health and it is He who bestows the blessing of long years. But the two do not always go hand in hand!" R. Iser Zalman may have been sickly, but he was blessed with a long and productive life.

A 55% chance of developing breast cancer over the course of a lifetime is a 55% chance of developing a serious malady. But sickness and longevity are not mutually exclusive phenomena. Longevity is not determined solely by BRCA1, BRCA2 or by any one of the vast majority of other defective genes. Every human being carries quite a number of "bad" genes. Every person has a genetic predisposition to one malady or another; indeed, we are probably all genetically predisposed to multiple diseases. Rejecting a prospective marriage partner because of the presence of a defective BRCA gene in no way assures that another prospective marriage partner is not endowed with an equally problematic genotype. Doubtless, by the time that all genetic implications are fully unraveled, no one will receive a clean bill of genetic health. If every prospective mate is rejected because of one genetic reason or another, marriage—and with it the human race—will become obsolete!

6. DESTIGMATIZATION: AN IMPERATIVE

The genome project looms so ominously and genetic testing is feared so greatly because our community has come to accept a certain type of "know-nothingness." We have accepted that posture, the medical community has cooperated in our acceptance, and the rabbinic community

has not only cooperated but has encouraged such acceptance. The end result is that we have allowed myths to grow and stigmatization of carriers to permeate the community. Until the present, when the science of genetics was still in its infancy or adolescence, the economic, emotional and social costs of this posture, although they have been significant, have nevertheless been contained. The real cost is the paradigm it has created for the future. As the science of genetics continues to develop, genetic links will be discovered for an ever-increasing panoply of diseases and more and more people will be identified as carriers of a rapidly expanding list of negative genetic traits. As a community, it is imperative that we embark upon a process of destigmatization.

The Gemara, *Niddah* 13b, teaches that God created a certain finite number of souls each of which awaits the opportunity to descend to earth. The Gemara further teaches that Israel will not be redeemed until the last of those souls is incarnated in the body of a newly conceived baby. Prevention of the birth of a child serves to delay the moment of redemption. A decision not to proceed with a *shiddukh* is a decision to postpone the *ge'ulah*.

We carry an awesome responsibility. As the earlier-cited statement of the *Zohar* tells us, we are living in an age that is the precursor of the eschatological era. Divine providence showers us with harbingers of that era; we dare not, heaven forbid, impede, rather than hasten, the advent of redemption.

"*Tamim tibeyeh im ha-Shem Elokekha*—You shall be wholehearted with the Lord your God" (*Deuteronomy* 10:10), is unquestionably a divine command. There is a point beyond which one should not attempt to discern what lies in the future, a point beyond which one should not endeavor to prevent the unpreventable, a point at which we must recognize that we dare not be overly concerned and overly protective of ourselves and our progeny. Only by acting prudently and rationally, while yet being "*tamim im ha-Shem Elokekha*," can we create the conditions in which redemption can become a reality.

NOTES

1. See "Concern Among Jews Is Heightened as Scientists Deepen Gene Studies," *New York Times*, April 22, 1998, p. A24.
2. See Michael Specter, "Decoding Iceland," *The New Yorker*, January 18, 1999, pp. 41-51 and Simon Mawer, "Iceland, the Nation of Clones," *New York Times*, January 23, 1999, p. A19.
3. For a report of specific mutations found in other ethnic groups, including Japanese, Swedes, and Italians see B. Keoun, "Ashkenazim not Alone: Other Ethnic Groups Have Breast Cancer Gene Mutations, Too," *Journal of the National Cancer Institute*, vol. 89, no. 1 (January 1, 1989), pp. 8-9.
4. See *Shabbat* 32a and *Th'vot* 20b.
5. For a discussion of confidentiality in Jewish law, see this writer's "Rabbinic Confidentiality," *Tradition*, vol. 33, no. 3 (Spring, 1998), pp. 64-87.
6. Indeed, the overwhelming majority of patients who learn that they are carriers of the much more serious BRCA mutation do not suffer untoward psychological consequences. See C. Lerman, S. Narod, K. Schulman *et al.*, "BRCA1 Testing in Families with Hereditary Breast-Ovarian Cancer: A Prospective Study of Patient Decision Making Outcomes," *Journal of the American Medical Association*, vol. 276, no. 24 (June 26, 1996), pp. 1885-1892 and R. Croyle, K. Smith, J. Botkin *et al.*, "Psychological Responses to BRCA1 Mutation Testing: Preliminary Findings," *Health Psychology*, vol. 16, no. 1 (January, 1997), pp. 63-72. Even more remarkably, in a Huntington's disease testing program levels of depression returned to baseline levels by one year after disclosure despite the fact that the patients realized that early demise was a certainty. See M. Bloch, S. Adams, S. Wiggins *et al.*, "Predictive Testing for Huntington's disease: The Experience of Those Receiving an Increased Risk," *American Journal of Medical Genetics*, vol. 42, no. 4 (February 15, 1992), pp. 499-507.
7. BRCA carriers are also at risk for developing ovarian cancer, although the risk is not as great as for breast cancer. See *infra*, note 36. Oophorectomy, i.e., surgical removal of the ovaries, is performed more frequently than prophylactic mastectomy both because the surgery is less radical and because current screening techniques for early-stage ovarian cancer are not especially effective.
8. See Katherine A. Schneider, "Genetic Counseling for BRCA1/BRCA2 Testing," *Genetic Testing*, vol. 1, no. 3 (November 2, 1997), p. 94. See also W. Burke, M. Daly, J. Garber, *et al.*, "Recommendations for Follow-Up Care of Individuals with an Inherited Predisposition to Cancer. II. BRCA 1 and BRCA 2," *Journal of the American Medical Association*, vol. 277, no. 12 (March 26, 1997), pp. 997-1003. One group of researchers has developed a decision analysis model that shows a three to five year gain in life expectancy of BRCA1/BRCA2 mutation carriers if they undergo prophylactic mastectomy at age 30 and a three month to two year gain if prophylactic oophorectomy is performed, but found only marginal benefit as a result of prophylactic surgery after age sixty or in oophorectomy before age forty. See Deborah Schrag, Karen M. Kuntz, Judy E. Garber and Jane C. Weeks, "Decision Analysis—Effects of Prophylactic Mastec-

- 1 Oophorectomy on Life Expectancy among Women with BRCA1/2 Mutations," *New England Journal of Medicine*, vol. 336, no. 16, 1997), pp. 1465-1471. Another study estimated that, not upon her cancer risks, prophylactic mastectomy improved survival of a thirty-year old woman by 2.8 to 3.4 years, prophylactic oophorectomy improved survival by 0.4 to 2.6 years and both procedures in combination improved survival by 3.3 to 6.0 years. See also V. R. C. S. Panageas, W. Whang *et al.*, "Decision Analysis of Prophylactic Mastectomy and Oophorectomy in BRCA1 Positive or BRCA2 Positive Women," *Journal of Clinical Oncology*, vol. 16, no. 3 (March, 1998), pp. 87-94.
2. Hicken, "Mastectomy: Clinical Pathologic Study Demonstrating that Mastectomies Result in Incomplete Removal of Mammary Glands," *Archives of Surgery*, vol. 40, no. 1 (January, 1940), pp. 6-14.
3. Hartmann, Daniel J. Schald, John F. Woods *et al.*, "Efficiency of Prophylactic Mastectomy in Women with a Family History of Breast Cancer," *New England Journal of Medicine*, vol. 340, no. 2 (July 14, 1999), pp. 77-84.
4. In addition to statistical probability, clinical features such as the consistency of the tissue and the resultant ease of examination as well as breast density factors to be considered. See Hartmann, p. 83.
5. Ahlomo Kluger, *Hekham Shlomo, Torah De'ab* 155:1; R. Abraham, *Tshuvot Mishpat Kohan*, no. 144, sec. 3; and R. Moshe Feinstein, *Mishpat, Hoshen Mishpat*, II, no. 75, sec. 2. Cf., however, R. Moshe Feinstein, *Tshuvot Va-Yashev Mishpat* (January, 5746), I, no. 75, Sec. 1.
6. A recent report of decisions reached by a number of women on the various considerations, both objective and subjective, is presented by Horowitz, "Time Bomb Genes," *New York Magazine*, February 1999, pp. 29-33 and 89.
7. Fisher, J. P. Constantino, D. L. Wickerham *et al.*, "Tamoxifen for Primary Prevention of Breast Cancer: Report of the National Surgical Adjuvant Breast and Bowel Project P-1 Study," *Journal of the National Cancer Institute*, vol. 18 (Sept. 16, 1998), pp. 1371-1388. However, two European studies showed that tamoxifen prophylaxis had no significant impact on the incidence of breast cancer. The latter studies are not entirely comparable because they involved fewer participants and because the patients were of different age and risk levels. Those studies also reflect differences in the extent of follow-up and other treatment. See T. Powles, R. Eccles, S. *et al.*, "Interim Analysis of the Incidence of Breast Cancer in the Arden Hospital Tamoxifen Randomized Chemoprevention Trial," *Lancet*, vol. 352 (July 11, 1998), pp. 93-97 and U. Veronesi, P. Maisonnave, A. Costa *et al.*, "Prevention of Breast Cancer with Tamoxifen: Primary Findings from the Italian Randomized Trial Among High-Risk Women," *Lancet*, vol. 352 (July 11, 1998), pp. 93-97.
8. See Fisher *et al.*
9. Armstrong, A. Eisen and B. Weber, "Assessing the Risk of Breast Cancer," *New England Journal of Medicine*, vol. 342, no. 8 (Feb. 24, 1999), p. 565.
10. See National Cancer Institute: *National Institutes of Health, Understanding Breast Changes* (September, 1977), p. 5; *idem*, "Cancer Facts and Figures," October 23, 1999, p. 1. The National Cancer Institute recommends a screening mammogram "every one to two years".
11. See American Cancer Society, *Breast Cancer Facts and Figures 1999-2000*, p. 11. The American Cancer Society's guidelines recommend an "annual mammogram". See also Armstrong *et al.*, p. 565.
12. See Burke, *et al.*
13. See Koria Kerlikowske, Deborah Grady, John Barclay *et al.*, "Positive Predictive Value of Screening Mammography by Age and Family History of Breast Cancer," *Journal of the American Medical Association*, vol. 270, no. 20 (November 24, 1993), pp. 2444-50.
14. See Armstrong *et al.*, p. 565.
15. See Francine Grodstein, Melvyn J. Stampfer, Graham A. Colditz *et al.*, "Postmenopausal Hormone Therapy and Mortality," *New England Journal of Medicine*, vol. 336, no. 28 (June 19, 1997), pp. 1769-1775; A.R. Folsom, P.J. Mink, T.A. Sellers *et al.*, "Hormonal Replacement Therapy and Morbidity and Mortality in a Prospective Study of Postmenopausal Women," *American Journal of Public Health*, vol. 85, no. 8 (August, 1995), pp. 1128-1132; and Graham A. Colditz, Susan E. Hankinson, David J. Hunter *et al.*, "The Use of Estrogens and Progestins and the Risk of Breast Cancer in Postmenopausal Women," *New England Journal of Medicine*, vol. 332, no. 24 (June 15, 1995), pp. 1589-1598.
16. D. Grady, S.M. Rubin, D.B. Petitti *et al.*, "Hormone Therapy to Prevent Disease and Prolong Life in Postmenopausal Women," *Annals of Internal Medicine*, vol. 117, no. 12 (December 15, 1992), pp. 1016-1037; and Nanada F. Col, Mark H. Beckman, Richard H. Karas *et al.*, "Patient-Specific Decisions About Hormone Replacement Therapy in Postmenopausal Women," *Journal of the American Medical Association*, vol. 277, no. 14 (April 9, 1997), pp. 1140-1147.
17. See Armstrong *et al.*, p. 564.
18. Since BRCA is associated with a somewhat higher risk of prostate and colon cancer carriers should be urged to adhere to the recommendations of the American Cancer Society regarding screening for prostate and colon cancer. Males, who may also be carriers of the BRCA gene, should undergo annual digital rectal examination and PSA tests beginning at age fifty. Both males and females carriers should undergo sigmoidoscopy every three to five years and fecal occult tests beginning at age 50. See Burke *et al.*
19. It should be stressed that negative results do not mean that the woman is devoid of risk; it means only that her risk is the same as that of the general population. Moreover, a negative result is meaningful only if a family member afflicted by breast cancer has already been identified as a BRCA carrier. If the person has not been so identified, the negative result for BRCA is meaningless since, in that family, some other unidentified genetic cause may be responsible for the disease.
20. For a listing of the state laws, see B.A. Trollino, ed., *Mapping Public Policy for Genetic Technologies: A Legislator's Guide* (Denver, 1998). Colorado prohibits use of genetic information in conjunction with issuance of long-

are insurance. See Colo. Rev. Stat. Ann. § 10-3-1104.7 (3) (b) (1998).

12. Rev. Stat. Ann. § 20-448 (West 1998); Cal. Ins. Code § 10148; Nev. Stat. Ann. tit. 24-A, § 2159-c (West 2000); Md. Code Ann., 27-208(a)(2)(i) (2000); Mont. Code Ann. § 33-18-106(4) (1998); Cal. Stat. Ann. § 17B:30-12(f) (West 2000); N.M. Stat. Ann. §§ 24-21-3 (Michle 2000); and Wis. Stat. Ann. § 631.89(3)(b)(2) (West 2000).

13. Rev. Stat. Ann. § 20-448 (West 2000); Cal. Ins. Code § 10148; Nev. Stat. Ann. Tit. 24-A § 2159-C (West 2000); Md. Code Ann. Ins. 208(a)(2)(i), and § 27-909 (2000); Mont. Code Ann. § 33-18-208(a)(2)(i), and § 27-909 (2000); N.M. Stat. Ann. § 24-21-3 to -4, (Michle 2000); and Wis. Stat. Ann. § 631.748 (West 1998).

14. Rev. Stat. 41-1463(B)(3) (West 1992 & Supp. 1997) (enacted July 3, 1998, ch. 99, 1998 Cal. Legis. Serv. 468 (West 1998)); 1998 Conn. Legis. Serv. 98-180 (West) (enacted 1998); Code Ann. tit. 18, § 2317 (1998) (enacted 1998); Iowa Code Ann. § 5 (1993) (enacted 1992); N.H. Rev. Stat. Ann. § 141-H:3.I(b) 7) (enacted 1995); 1998 N.M. Adv. Legis. Serv. ch. 77 (enacted 1998); N.Y. Exec. Law § 296(1)(a) (Consol. 1998) (enacted 1996); N.C. Stat. § 95-28.1A (1997) (enacted 1997); Okla. Stat. tit. 36, § 1 (1998) (enacted 1998); R.I. Gen. Laws § 28-67-1 (1995) (enacted 1992); Tex. Lab. Code Ann. §§ 21.410-402 (West Supp. 1998) (enacted 1997); Va. Stat. Ann. tit. 18, § 9333(a) (1998) (enacted 1998); Wis. Stat. Ann. § 111.372 (West 2000) (enacted 1992).

15. Americans with Disabilities Act of 1990, Pub. L. No. 101-336, 104 Stat. 42 U.S.C. §§ 12101-12213 (1994).

16. Equal Employment Opportunity Commission, *Compliance Manual*, 1 (March 14, 1995), §§ 902-45, reprinted in *Daily Labor Reports* (March 16, 1995), E-1, E-23.

17. Commentator has pointed out the statute does not serve to bar discrimination against unaffected carriers of recessive or X-linked disorders because prospective employers might be concerned about the health care costs of future dependents. Examples of such situations include individuals whose carrier status creates a risk of having a child afflicted with Duchenne muscular dystrophy or cystic fibrosis. See Mark A. Rothstein, "Genetic Privacy and Confidentiality: Why They Are so Hard to Protect," *Journal of Law, Medicine & Ethics*, vol. 26, no. 3 (Summer, 1998), p. 202.

18. See the valuable suggestions offered by Rothstein, "Genetic Privacy," and Richard A. Bornstein, "Genetic Discrimination, Insurability and Legislation: A Closing of the Legal Loopholes," *Journal of Law and Policy*, vol. 1, no. 2 (1996), pp. 551-610; and Eric M. Holmes, "Solving the Insurance/Genetic Fair/Unfair Discrimination Dilemma in Light of the Human Genome Project," *Kentucky Law Journal*, vol. 85, no. 3 (1996-1997), pp. 503-664.

19. *Errot Masbeh, Even ha-Eser IV*, no. 73, sec. 2, who advises that a person should disclose that he suffers from Marfan's syndrome, a condition that may result in sudden and premature death, lest the marriage be *kiddushai ta'ut*.

36. See D. Ford, D. F. Easton, D.T. Bishop *et al.* and The Breast Cancer Linkage Consortium, "Risks of BRCA1-Mutation Carriers," *Lancet*, vol. 343 (March 19, 1994), pp. 692-695 and R. Wooster, S.L. Neuhausen, Mangion *et al.*, "Localization of a Breast-Cancer Susceptibility Gene, BRCA2 to Chromosome 13q12-13," *Science*, vol. 265 (Sept. 30, 1994), pp. 2088-2090. Associated risk estimates of ovarian cancer were reported as being between 30%-65% for BRCA1 mutation carriers and between 10%-20% for BRCA2 mutation carriers.
37. Jeffery P. Struwing, Patricia Hartge, Sholom Wacholder *et al.*, "The Risk of Cancer Associated with Specific Mutations of BRCA1 and BRCA2 among Ashkenazi Jews," *New England Journal of Medicine*, vol. 336, no. 20 (May 15, 1997), pp. 1401-1408.
38. See *Shulhan Arukh, Hoshen Mishpat* 228:6. *Iggerot Masbeh, Even ha-Eser IV*, no. 73, sec. 2, declares that the prohibition against fraud certainly applies in marital matters and "perhaps it is even more stringent in such matters than in commercial transactions".
39. See the discussion of this matter by R. Ya'akov Blau, *Pithei Hoshen, IV*, 12:1, note 2.
40. Cf. the citation of this verse by the Gemara, *Makhot 24a*, in connection with commercial dealings as elucidated by Rashi, s.v. *Rav Safra*.

The Ethnic NewsWatch
Lilith

September 30, 1997

SECTION: Vol. 22; No. 3; Pg. 26

LENGTH: 2506 words

HEADLINE: A Secret Affliction: Manic Depression and Jews

BYLINE: Kreuzer, Terese Loeb

BODY:

A Secret Affliction: Manic Depression and Jews

Just as we'd begun to assimilate the news about the genetics of breast cancer and Jewish women, we discover that we have to pay attention to bipolar illness -- how it affects Ashkenazi Jews, and why women are at risk.

Lisa Soloway, (+) a beloved child in a middle-class Jewish family, was popular, an accomplished student and a talented artist. She was in college when she was hospitalized for the first time. She recalls that she had been doing drugs and hadn't slept for several days. She felt "weird." She began running around the street at 4 a.m., shouting, giving away dollar bills.

From that point, throughout her adult life, she was hospitalized often -- the diagnosis, bipolar disorder; more popularly known as manic depression. But despite some times lengthy hospitalizations and a divorce, she finished college and a graduate program and raised two children. She held down a number of highly responsible professional jobs, and in between manic and depressive episodes, she'd "pull together completely," says a friend.

In a strange way, Lisa was lucky. Her symptoms of mania and depression were so obvious that she received immediate treatment. She spent years on a combination of different medications, often administered against her will. She had jobs where her illness was accepted as being of biological origin and a disability like any other, and where she had medical insurance that included good mental health coverage. She had a supportive family and steadfast friends who saw her through legal troubles and hospitalizations. Many people are not so "lucky."

A 46-year-old man from another middle-class Jewish family, whose bipolar disorder was not diagnosed until he was 44, has also been married and divorced twice; despite two masters' degrees, Al Silber(+) has been unable to hold a job. "I don't know what to do," he wrote to his older sister. "I had a home, a life, a family, work. Respect, possibilities, future, income. Now what? I don't know where to go. I am so alone in this world. So afraid of being on the street, so desperate just to get the demons out of my head."

... she recounts. As long as

she could remember, her brother had gone from crisis to crisis. Kind, generous and insightful most of the time, he was also capable of violent rages. Several times, he attacked her physically. Their widowed mother refused to have Al in her house. The psychiatrist who finally labelled his problem as manic depression told him, "You've been going through episodes of this stuff since you were a child. You suffered for 35 years needlessly. That's the tragedy of it -- this illness wreaked havoc on everything that happened to you."

By the time he was diagnosed, Al's three children were alienated from him, and his oldest -- who'd had an abortion at 14, attempted suicide at 15, and at 19 had dropped out of college -- was also showing clear signs of suffering from the disorder, which has a strong hereditary component and, according to some studies, a greater likelihood of being expressed in Ashkenazi Jewish families.

A mood disorder, manic depression affects more than 2.5 million Americans, about half of them women, and it subsumes a wide spectrum of behaviors. Sometimes, people with manic depression are psychotic, meaning that they are out of touch with reality. Often, however, they may function adequately -- even brilliantly. The defining characteristic of the disorder is that people who have it cycle between depression and mania or between either depression or mania and periods of normality.

Roughly 1 percent of the population has some form of bipolar disorder, but if one parent has the disorder, there is a 25 percent to 30 percent likelihood that his or her children will have it, too, and if both parents have major depression or manic depression, the risk of their children developing one of these mood disorders or schizophrenia is 50 percent to 75 percent.

This year, Johns Hopkins University launches a major project to study Ashkenazi families, advertising for research subjects in Anglo-Jewish newspapers across the country. Two medical authorities on manic depression, Drs. Frederick K. Goodwin and Kay Redfield Jamison, quote studies that find "manic-depressive illness rates are higher in Ashkenazic Jews (born in Europe or the Americas) than Gentiles, with no differences between Sephardic Jews (born in Asia or Africa) and Gentiles." Citing research conducted from the early 1960s to the 1980s, they note a 1975 finding that 45 percent of the patients with affective disorders in Jerusalem had bipolar illness, compared to only 19 percent in Sweden.

While Goodwin and Jamison hasten to point out that these and other epidemiological studies are not conclusive, what researchers are finding without a doubt is that many Jews with a familial history of bipolar disorder or schizophrenia are not likely to acknowledge it -- surprising because the stereotype of the 20th-century urban Jew is of someone with great faith in psychiatry. But bipolar illness is biological in origin, unlike the neurotic ailments that are considered to be learned behavior and hence can be unlearned in therapy; manic-depression cannot be altered simply by the "talking cure" that Woody Allen movies suggest is the birthright of every "nice neurotic" Jew.

Dr. Ann Pulver, a geneticist who is conducting the Johns Hopkins study, commented that she is "very saddened" by the Jewish response to her bipolar study. "The stigma associated with mental illness in the Jewish population is so much more pronounced than in the general population," she says. "I've been

I would have expected."

The High Cost of Keeping It Quiet

"The rabbis are in denial," says Pulver, "I've gone to Orthodox rabbis -- where the community is more inbred than the general Jewish population and where they have large families, so that genetic studies are very important -- but it's a real shanda (shame) to have someone ill in your family. They don't even tell their brothers and sisters. I know of a situation where there were two sisters, each with a schizophrenic child, and the women didn't know they had schizophrenic nieces and nephews."

According to Pulver, the reason why Orthodox families are often so diligent about hiding this mental illness is that it affects the marriagability of the afflicted person's siblings and cousins. "It would have to be reported (to the potential spouse)," she says. "And that's why, when I went to the Orthodox rabbis, they told me there was no mental illness in their congregations -- they send ill people out of the community. I've run into a couple of families in Baltimore that have sent their sick children to Israel, and I've met families in Israel that have sent their children to the States. Anywhere but home."

Pulver says she believes that both Orthodox and more liberal Jews stigmatize mental illness more than non-Jews because of the high value placed on intellect and achievement.

Some may be in denial about their own manic-depression because one form of the illness, hypomania draws out characteristics that are highly valued in the Jewish community and in society in general. Hypomania, in which people have a great deal of energy and may be very productive, "can have a socially beneficial outcome" explains David Chowes, a board member of the National Depressive and Manic Depressive Association and an instructor in psychology at Baruch College in New York City. "There are probably people you know who are always working. They leave home at six in the morning and they get to the office before anyone else. They earn a tremendous amount of money and they're always doing things and they go very far in corporations or in law practices. The price, of course, is that hypomanics can become manic and often also have depressive episodes."

How Women Differ

Not only are there special issues for Jews when it comes to manic depression, there are particular issues for women as well. Bipolar women are more likely than men to develop a rapid-cycling form of the illness, and may be at higher risk than men for depressive episodes and for episodes of mixed (as opposed to pure) mania. These gender differences have not been thoroughly researched, although clinicians know that manic-depressive women behave differently than manic-depressive men and also are more likely to have extra concerns over childbearing.

First, men are likelier than women to suffer from the most extreme manic symptoms -- hallucinations, paranoia and other delusions -- and some experts speculate that manic-depressive men are more likely than women to get treatment early in their illness. Second, while most doctors are clear that manic depression should not stop a woman from becoming pregnant, issues of treatment do arise: How will medication interact with the developing fetus? If a woman

emotional balance?

"I had to go off lithium to get pregnant," says one 33-year-old woman who is expecting her first baby this year. One of seven children, three of whom have been diagnosed with manic depression, she said that she had "put a lot of serious thought" into whether it was safe to get pregnant. Working closely with her doctor, she went back on lithium in her third trimester as her signs of manic depression began to reappear. She is particularly worried about the possibility of post-partum depression, and with good reason.

"From both the clinical and research perspectives," writes Dr. Ellen Leibenluft, who has studied women and bipolar illness, "it is worth noting that there is no time in the life of a bipolar patient when the risk of an episode is higher than it is for a female bipolar patient in the postpartum period," especially if she has had a previous episode of post-partum depression.

These considerations, plus apprehension about transmitting manic depression to another generation, may cause some bipolar women to avoid pregnancy. However, Ann Pulver believes that the genetic odds should not prevent a bipolar woman from having children.

"We know that these diseases incur risks to the offspring of the people who have them," she says, "and the risk is greater than that of the general population. But given the fact that we are all unique genetic human beings, we're all at risk for different things. We all have susceptibility genes. It's a very personal choice whether or not you want to have a child. Let's say you're walking around with coronary heart disease genes. This is just another in a long list."

"They're Hell to Live With"

Untreated, the repercussions of manic depression can be severe. Drs. Goodwin and Jamison state in their book *Manic-Depressive Illness* that one study found that "the long-term burdens of the illness included financial difficulties, home and child neglect, marital problems, loss of status and prestige, constant tension, and fears of recurrence of acute illness." The disruptions were so severe that, when asked whether, if they could do it over, they would have married and had children with their manic-depressive partners, about half said "no."

"When someone is manic, they're hell to live with," observes Dr. Kathy Jungreis, a Boston therapist. "They're all over the place. They're irritable. Their rage gets closer and closer to the surface. People close to them are constantly anxious about what they're going to do next."

Meg Levine, (*) the daughter of a manic-depressive mother who "was never normal," conveys what it was like from the child's perspective. "We were never physically abused," she says. "It was all emotional abuse. She threw my sister out of the house when she was a teenager. She falsely accused my brother of being on drugs, and she stole money from us and accused him. That's the worst thing that she's ever done. She drove divisions between us. I'm still really on talking terms with only one of my siblings."

Meg Levine is herself a mother with a six-year-old son. "My mother identified

with me pathologically when I was a child, so whenever I feel depressed, I have this unbelievable fear that I'll be crazy like my mother," she says. "Now that I'm a mother myself, my childhood has come back with a vengeance. I'm reliving many of the things that happened as I'm raising my child."

A Flaw in Biology, Not Character

The good news is that with the current armamentarium, most cases of manic depression can be treated. The difficulty is in getting people to acknowledge that they have the disorder and go for treatment. But the problem doesn't stop with initial treatment; people often stop taking their medication as they begin to feel better, and in the manic stage some people, unaware of the state they're in, declare that they have no need for the medication.

And then there is the stigma and the continuing misunderstanding of this disorder. Consider the case of Sol Wachtler, former Chief Judge of the New York State Court of Appeals, who was imprisoned for harassing and threatening his former lover, Joy Silverman. Wachtler, who was diagnosed as manic depressive, wrote a book about his experiences called *After the Madness*. Reviewing the book in *The New York Times*, Richard Bernstein wrote, "The former judge, who was New York's highest judicial official, attributes his behavior, as his title suggests, to 'madness,' a depression for which he took drugs that intensified his manic-depressive state. He alternated between deep despair and delusions of omnipotence.... Reading this, one wishes for greater consideration by Mr. Wachtler of the possibility that a character flaw was at work more than the sleeping pill Halcion or the anti-depressant Pamelor. Was he so used to getting what he wanted in his life that Ms. Silverman's rejection of him was intolerable? Was this more a case of hubris than of drug addiction?"

Bernstein's comments ignore the effects of anti-depressant medication on someone who is bipolar. As psychopharmacologists know, anti-depressant drugs can sometimes precipitate mania in someone who is bipolar; this is actually one of the incontrovertible ways of diagnosing the illness. Wachtler's behavior truly may have been beyond his control.

Says Chowes, "As you have treatments that begin to work, the illness is less stigmatized. There are people who are so disabled by the illness that it's appropriate to restrict their options, but if a person is controlled, there's no reason why he or she can't go back to work or to responsible situations."

Manic depression is a complex disorder with many ramifications, organic in origin, and treatable. Until this is more widely understood, it will remain for Jews, as for many others, a secret affliction, often with bitter consequences.

(*) Some names and identifying characteristics have been changed to protect the identity of those involved.

**WHAT
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SHOULD
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**JEWISH
GENETIC
DISEASES**

BLOOM'S SYNDROME

Since this syndrome was first described by New York dermatologist David Bloom in 1954, over 170 individuals have been recognized as being affected. Bloom's syndrome is inherited as an autosomal recessive disease. Once a couple has an affected child, there is a 1 in 4 (25%) chance for affected offspring in each future pregnancy. The gene mutation is very rare in most populations, but is more frequent among Ashkenazi Jews, where the carrier rate may be greater than 1 in 110 (approximately 1%). Carriers of Bloom's syndrome do not manifest symptoms of the disease.

Affected individuals, who have inherited two copies of the Bloom's syndrome gene mutation, typically have the following features: (a) unusually small size at birth but otherwise a normal degree of maturation; (b) shortness of stature after birth, only rarely reaching 5 feet; (c) redness of the skin of the face, mainly the bridge of the nose and the adjoining upper cheek areas, the lower eyelids, and the lower lip; and (d) increased numbers of respiratory tract and ear infections, some of which are life-threatening. The skin problem, which is aggravated by sun exposure, varies in severity. It may be quite disfiguring in some affected persons but mild or even absent in others, however it generally improves with age. Intelligence is usually normal, although mild deficiency has occurred in a few affected persons. Diabetes occurs in approximately 10% of individuals with Bloom's syndrome. Infertility is the rule in men with Bloom's syndrome, and fertility appears to be reduced in women. The risk of cancer is much greater than normal throughout life, of the variety of sites and types that affect the general population.

There is no treatment for the underlying cause of Bloom's syndrome, and therefore medical intervention is primarily preventative. Adults with Bloom's syndrome should be more attentive than others in their surveillance for cancer, maintaining close contact with a physician knowledgeable about the syndrome, and paying particular attention to

symptoms that could be early evidence of a treatable precancerous condition. Respiratory infections require prompt antibiotic treatment. Although growth hormone therapy has been attempted to increase height in children with Bloom's syndrome, it does not appear to be effective. In addition, there is some concern that the use of growth hormone may increase the risk for later malignancies.

The diagnosis of Bloom's syndrome can be confirmed or ruled out by a laboratory test known as a chromosome study, as blood and skin cells show a characteristic pattern of chromosome breakage and rearrangement. Recently, the gene for Bloom's syndrome was isolated. The gene is located on chromosome 15, and one particular mutation in the gene has been identified as the cause of Bloom's syndrome in the vast majority of Ashkenazi Jews. Because of these recent findings, both carrier testing and prenatal diagnosis for Bloom's syndrome are now available.

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FAMILIAL DYSAUTONOMIA

Familial dysautonomia (FD) is a rare genetic disease that results from the abnormal development of the nervous system, particularly the sensory and autonomic systems. *Dys-auto-no-mia* literally means the dysfunction of the autonomic nervous system. The autonomic nervous system controls involuntary functions, such as swallowing, temperature and blood pressure regulation. Individuals with FD cannot regulate these autonomic functions. In addition, they have problems in perceiving various sensations, such as pain and heat.

One of the most striking manifestations is the inability to produce overflow tears with emotional crying. Severe eye problems are common because of the resulting dry eye and the absence of corneal response to foreign objects in the eye. Many infants have an abnormal suck at birth and feeding difficulties may persist, resulting in poor weight gain, as well as repeated pneumonia due to misdirected swallows. Other common manifestations are indifference to pain (including minimal or no response to bone fractures), inappropriate perception of heat and taste, excessive sweating, fluctuating blood pressures, gastrointestinal problems, poor speech and motor incoordination. Many children have stunted growth and scoliosis (curvature of the spine). Forty percent of the children are prone to repeated attacks of vomiting. Intelligence is usually normal. Some individuals with FD complete college programs and can be expected to function

independently if treatment is started early and major disabilities are avoided.

Treatment has had a dramatic impact on improving the prognosis of this disorder. Prior to 1960, approximately 50% of patients died before five years of age. Currently, approximately 50% of patients reach 30 years of age. The greatest impact on treatment has been the increased use of gastrostomy (surgical incision into the stomach) and fundoplication (mobilization of the lower end of the esophagus and subsequent folding of a portion of the stomach around it) to avoid aspiration pneumonia and to maintain adequate nutrition and hydration. Some other important treatment methods have been the use of diazepam and chloral hydrate to control intractable vomiting attacks, and artificial tears to supplement decreased eye moisture. In addition, blood pressure regulation is enhanced by giving extra fluid and salt, physical therapy and an anti-inflammatory medication known as fludrocortisone.

FD is inherited in an autosomal recessive manner and affects boys and girls equally. It only occurs in families of Ashkenazi Jewish descent. It is estimated that 1 out of every 32 Ashkenazi Jews in America is a carrier. In 1993 researchers established that the gene for FD (referred to as DYS) is located on chromosome 9. In 1999, the location of DYS was narrowed to a very small region of chromosome 9, known as 9q31. It appears that this small region on chromosome 9 is bordered by flanking markers on either side of the DYS gene. These markers are always inherited along with the disease. As a result of these recent findings, genetic testing to confirm diagnosis, predict carrier status, and identify affected pregnancies is now possible.

The year 2001 ushered in the discovery of the genetic mutation responsible for the disorder. This means that a simple blood test can be performed to learn if an individual is a carrier of the FD gene. Prevention is possible. Research now is faced with the challenge of developing a cure!

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FANCONI ANEMIA

Fanconi anemia is a blood disorder characterized by pancytopenia (deficiency of red blood cells, white blood cells and platelets), increased risk for cancer, and congenital birth defects. The disease is highly variable and is frequently associated with cardiac, kidney and limb abnormalities. Short stature is commonly observed in children and adults with Fanconi anemia, and other growth measurements may also be below normal. Bleeding episodes and bruising are common, as are hormonal problems and infertility. The majority of individuals with Fanconi anemia are diagnosed during childhood, but many do not survive beyond young adulthood. This is frequently a result of leukemia or other cancers, which are due to bone marrow failure.

Treatment for Fanconi anemia is primarily preventative. Individuals with Fanconi anemia may pursue bone marrow transplantation on an experimental basis, however there is to date no consistently effective treatment. In order to detect cancers early, individuals with Fanconi anemia should arrange for frequent screenings. In addition, avoidance of sun exposure and other agents which may damage the chromosomes is imperative.

Although five subtypes of Fanconi Anemia exist, it is only Type C that occurs with increased frequency among individuals with Ashkenazi Jewish ancestry. It is estimated that approximately 1 in 89 Ashkenazi Jewish individuals are carriers of Type C. All types of Fanconi anemia are inherited in an autosomal recessive manner. Therefore parents of an affected child have a 1 in 4 (25%) chance in each future pregnancy to have another child with Fanconi anemia.

In the past, a diagnosis of Fanconi anemia was based on clinical observation and the results of laboratory studies. Cytogenetic analysis was used to reveal chromosome breakage, which is characteristic of Fanconi anemia. Carriers of Fanconi anemia cannot be reliably identified by chromosome breakage studies, and it was not until recently, when the

gene for Fanconi anemia was isolated on chromosome 9, that identification of Fanconi anemia carriers became possible. One mutation in particular accounts for the vast majority of Ashkenazi Jewish carriers. Type C carrier testing is therefore available for Ashkenazi Jewish couples. In the event that both parents are found to be carriers of Fanconi Anemia Type C, prenatal diagnosis is available via either chorionic villus sampling (CVS) or amniocentesis.

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GAUCHER DISEASE

Gaucher disease Type 1 is the most prevalent Jewish genetic disease, occurring in one in every 1,000 Ashkenazi Jews. During the last few years dramatic advances have been made, including DNA based diagnosis and carrier detection, as well as development of effective enzyme replacement therapy.

There are three clinical subtypes of Gaucher disease, which are distinguished by the absence or presence and severity of neurologic complications. Type 1 disease, which does not involve the nervous system, occurs with high prevalence among Ashkenazi Jews. Approximately 1 in every 12 Ashkenazi Jewish individuals is a carrier of a gene mutation that causes Gaucher Type 1. Type 2 disease is a fatal neurodegenerative disorder of infancy, similar to Tay-Sachs disease. Type 3 disease is a slowly progressive neurologic disease with survival into adulthood. The occurrence of type 2 or 3 Gaucher disease among Ashkenazi Jews is extremely rare, and the incidence of these subtypes is not increased beyond what is observed in other populations.

Gaucher disease an autosomal recessive disorder resulting from the deficiency of an enzyme, glucocerebrosidase. This enzyme deficiency leads to the progressive accumulation of a fatty substance, glucocerebroside, in "Gaucher cells". Gaucher cells are found particularly in the liver, spleen, and bone marrow. The gene for glucocerebrosidase has been isolated on chromosome 1, and several different gene mutations have been identified among Ashkenazi Jews. Measurement of the enzyme level and/or direct demonstration of gene mutations enable the diagnosis of affected individuals. Carrier screening and prenatal diagnosis can be performed by gene mutation analysis. The latter is made possible by using tissue obtained from either CVS or amniocentesis.

In Type 1 Gaucher disease, symptoms most frequently begin in adulthood, but may begin in childhood or adolescence. Bone marrow involvement

MUCOLIPIDOSIS IV

can cause bone and joint pain, fractures, and other orthopedic problems. Involvement of the spleen and liver cause enlargement of these organs as well as blood abnormalities such as anemia, easy bruising, and impaired blood clotting. The manifestations in individual patients vary. Some may suffer from chronic ill health, while others may experience few, if any, of the disease manifestations. It is important that patients be followed by physicians who are experts in the diagnosis, management, and treatment of Gaucher disease.

Until recently, the complications of Gaucher disease have been managed by appropriate medical and/or surgical intervention. However, ongoing treatment with glucocerebrosidase has been shown to effectively reverse most of the clinical manifestations in affected patients. This treatment has proven safe and effective and there are many patients currently receiving enzyme replacement therapy. During the next decade, it is anticipated that "gene therapy" will be developed to provide a continuous source of the missing enzyme.

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Mucopolipidosis IV (ML IV), first described in 1974, is among the most recently recognized Jewish genetic diseases. To date, over 70 patients, most of Ashkenazi descent, have been reported. Children with ML IV appear normal at birth but develop signs of central nervous system deterioration during the first year of life. Sitting is delayed and most people with ML IV do not walk. Motor and mental retardation are usually mild to moderate, and are slowly progressive. Some patients may become more severely retarded in the second or third year of life. One of the earliest signs of ML IV is an eye problem referred to as corneal clouding, but approximately 30% of persons with ML IV do not develop corneal clouding until between three and five years of age. Other eye findings may include strabismus (crossed eyes), and retinal degeneration, which if it develops may lead to blindness in later years. Individuals affected with ML IV currently range from 1 to 30 years of age. Prognosis beyond this age and life expectancy are not known. Recently, a few very mildly affected individuals with ML IV have been described, which raises the possibility of other mildly affected but undiagnosed individuals.

The name, mucopolipidosis IV, derives from the presence of diagnostic storage bodies (cells with a characteristic appearance that can be seen using an electron microscope) in almost every cell of affected patients. The storage bodies contain incompletely broken down materials, known as lipids, due to either an enzyme abnormality or deficiency. Similar storage bodies are observed in related disorders known as the mucopolysaccharidoses and lipid storage diseases. Thus, the designation mucopolipidosis. The diagnosis should be considered in mildly to moderately retarded Ashkenazi Jewish children who have corneal clouding. The demonstration of the characteristic storage bodies in a skin biopsy supports the clinical diagnosis.

The disease is inherited in an autosomal recessive manner. When a child is born with ML IV, it

indicates that both parents are carriers of the disease. Carriers themselves are unaffected, but carrier couples have a 1 in 4 (25%) chance in each pregnancy to have an affected child. Carrier testing is not currently available, however prenatal diagnosis of ML IV has been successfully accomplished by finding the characteristic storage bodies in amniotic cells obtained by amniocentesis. The prenatal diagnosis is difficult and must be performed in a center with experience in the specialized techniques required for this disease. To date this testing is not performed in the United States, but may be within the near future. A laboratory at Hadassah University in Israel is able to perform prenatal diagnosis, and specimens may be sent there if necessary.

The specific biochemical and genetic defects which cause ML IV are not yet known. Research has focused on a possible defect in the metabolism of phospholipids (molecules that are of great importance for the structure and function of cell membranes) and gangliosides (molecules found in high concentration in the central nervous system). Further research underway to identify the gene location and the specific enzyme abnormality could lead to both the development of precise methods for diagnosis and the identification of carriers of ML IV.

At present, no specific therapy for ML IV is available. Optimal supportive care and medical management can significantly improve the quality of life for affected children. Families with affected children should seek genetic counseling and inquire about the availability of prenatal diagnosis for future pregnancies.

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NIEMANN-PICK DISEASE

The first case of infantile-onset Niemann-Pick disease was described in 1914 by the German neurologist Albert Niemann. Subsequently, five subtypes have been identified, but only Type A is more frequent in Ashkenazi Jewish populations. Type A disease is a severe neurodegenerative disorder of infancy. By six months of age, affected babies experience feeding difficulty, recurrent vomiting, and enlargement of the spleen and liver, which causes the abdomen to appear distended. Some have a characteristic "cherry-red spot" in the retina of the eye. Death usually occurs by two to three years of age, due to infections such as pneumonia.

Type B disease is a milder disorder with no neurologic involvement. Affected individuals usually come to medical attention in childhood due to enlarged livers and spleens. With adolescence and adulthood the major symptoms are associated with pulmonary disease, due to involvement of the lungs. Patients with Type B disease may survive into the fourth and fifth decades of life.

The specific biochemical defect in both Types A and B Niemann-Pick disease is the deficiency of an enzyme, sphingomyelinase, which normally degrades a fatty substance known as sphingomyelin. The enzyme defect leads to the accumulation of sphingomyelin, primarily in the liver, spleen, lymph nodes, and brain. Individuals affected with Type A disease have little or no (0-5% of normal) sphingomyelinase activity, whereas persons with Type B have 5-10% of normal activity, thereby accounting for their milder manifestations.

Recently, the gene for sphingomyelinase was isolated on chromosome 11. Analyses revealed that three common mutations in the gene were responsible for over 90% of Type A disease in Ashkenazi Jews. Another mutation was found to be a common cause of Type B Niemann-Pick disease in both Jewish and non-Jewish patients.

Both Type A and B Niemann-Pick disease are inherited in an autosomal recessive manner. When both parents are carriers of sphingomyelinase gene mutations, there is a 1 in 4 (25%) chance in each pregnancy to have an affected child. It has been estimated that approximately two-thirds of all infants with Niemann-Pick Type A disease are of Ashkenazi Jewish descent, and approximately 1/90 Ashkenazi Jews are carriers of Type A. The carrier rate of Niemann-Pick Type B disease is not known, but it is no more common among Ashkenazi Jews than it is in other populations.

The diagnosis of Type A or B disease can be made either by demonstration of the enzyme defect, or by identification of the specific mutation(s) in the sphingomyelinase gene. Prenatal diagnosis is most often made by gene mutation analysis, using cells obtained from either CVS or amniocentesis. Prenatal diagnosis of Niemann-Pick may also be made by measurement of acid sphingomyelinase activity. Carrier screening of Ashkenazi Jewish individuals is now available using gene mutation analysis, but is targeted primarily towards Niemann-Pick Type A.

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TAY-SACHS DISEASE

Tay-Sachs disease is the most well known Jewish genetic disease, potentially affecting one in every 2,500 Ashkenazi Jewish newborns. Two forms of this disease occur in Ashkenazi Jews, the well known infantile-onset form and a lesser known, late-onset or adult form designated "chronic GM2-gangliosidosis".

Infantile Tay-Sachs Disease

This disease is characterized by the onset of severe mental and developmental retardation during the first four to eight months of life. An early sign of the disease is the cherry-red spot, an unusual abnormality in the retina of the eye observed only by use of an ophthalmoscope. The involvement of the central nervous system progresses rapidly and affected children become totally debilitated by two to five years of life. Affected children also develop seizures which are not controllable with anti-epileptic drugs. Death usually occurs by five to eight years of life due to pneumonia or other infections.

Tay-Sachs disease is an inherited metabolic disorder. The basic defect in affected children is the deficiency of an enzyme, hexosaminidase A. This enzyme normally breaks down a naturally occurring fatty substance called GM2-ganglioside. The enzyme deficiency leads to a toxic accumulation of GM2-ganglioside in the cells of the nervous system. The gene for hexosaminidase A has been isolated on chromosome 15 and several specific mutations which cause infantile Tay-Sachs disease in Ashkenazi Jewish individuals have been identified.

Tay-Sachs disease is inherited in an autosomal recessive manner. Each parent of an affected child is a carrier of the disease. For such a "carrier couple," there is a 1 in 4 (25%) chance in each pregnancy to have an affected child. At present no treatment is available for Tay-Sachs disease. Therefore, emphasis has been placed on public education, carrier screening, and prenatal diagnosis for the prevention of this devastating disease.

Measurement of hexosaminidase A activity in plasma or white blood cells can reliably determine if an individual is a carrier of Tay-Sachs disease. In some instances it may also be important to confirm carrier status by performing gene mutation analysis. The ability to identify carriers reliably by both enzyme and gene mutation analyses has led to large-scale screening programs designed to prospectively (prior to pregnancy) identify carriers, and in particular, couples in which both spouses are carriers of gene mutations. Such carrier detection pro-

grams have become the prototype for prevention of genetic disease. To date, Tay-Sachs screening programs have detected over 38,000 carriers, or one in approximately every 26 Jewish individuals tested. More importantly, almost 1,100 carrier couples have been identified and counseled as to their 25% chance to have an affected child. Since prenatal diagnosis for this disease is available and quite reliable, these couples have the option to have unaffected children. Prenatal diagnosis is made possible by performing either CVS or amniocentesis. To date, over 2,500 pregnancies have been monitored.

Chronic GM2-gangliosidosis

A late-onset form of hexosaminidase A deficiency occurs in adolescents and adults of Ashkenazi Jewish ancestry. This disorder, called chronic (or adult) GM2-gangliosidosis, or late-onset Tay-Sachs disease (LOTS), has been detected in over 30 individuals from Ashkenazi Jewish families residing in both the United States and Israel. Onset of the disease occurs during childhood or adolescence and is characterized by poor coordination, tremor, and/or slurred speech. Because adult-onset Tay-Sachs may be confused with other disorders, some patients may have previously been misdiagnosed. These other disorders include Friedreich's ataxia, Kugelberg-Welander disease, and an amyotrophic lateral sclerosis-like disorder. With advancing age, patients develop neurologic symptoms including ataxia (inability to coordinate voluntary muscle movement), unsteady gait, muscle weakness, and slurred speech. In the fourth decade of life, mental and behavioral involvement may become evident.

Chronic GM2-gangliosidosis is inherited in an autosomal recessive manner. The mutation in the hexosaminidase A gene that causes this form of the disease in Ashkenazi individuals has been identified. Carriers and affected individuals can be diagnosed by the deficiency of the enzyme, hexosaminidase A, or by demonstration of the specific gene mutation. Today most carriers for this form of hexosaminidase A deficiency are detected during

mass-screening programs for infantile-onset Tay-Sachs disease.

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TORSION DYSTONIA

The tragedy of dystonia, a disease affecting movement control, may be best described through the brief case history of a young girl. Her early development was quite normal, but at age six she complained of difficulty walking. Medical evaluation first revealed no explanation, and the problem was mistakenly considered psychological. However, her torsion spasms progressed and by age 10 she could hardly walk. At age 11, the dystonia was generalized, her limbs became rigid and contracted, and she had to rely on a wheelchair for mobility. By age

12, she required help for all her daily living activities; she could not feed or dress herself or get in or out of bed unassisted. However, her voice and her mind remained normal.

The earliest description of familial dystonia may have been in 1907 by a psychiatrist-in-training who reported on two brothers and a sister who were hospitalized for "hysterical" torsion spasms. One brother committed suicide in the institution, the sister eventually died of the disease, but the second brother was discharged after several years and later married and had an affected son and daughter.

Life expectancy for individuals with dystonia is usually normal. Some medications have been found to be useful in a proportion of patients, particularly children. Injections of certain drugs into contracting muscles in order to weaken them can be helpful in those who have dystonia limited to only one or two parts of the body. Brain surgery may be useful in some cases of severe intractable dystonia.

One inherited form of dystonia is more common in Ashkenazi Jews. This form of dystonia is inherited in an autosomal dominant manner. As with the girl described above, the disease generally appears between the ages of six and sixteen years, and progresses fairly rapidly. The sustained, twisting spasms may be limited to one limb at first but often spread to other limbs and the midsection. The mind is not affected and patients usually are intelligent and mature.

The disease can affect non-Jewish families as well, but at a much lower frequency. The gene responsible for dystonia in the Ashkenazi Jewish population (as well as in seven non-Jewish families) has been localized to chromosome 9. This gene has been excluded as the cause of dystonia from at least five non-Jewish patients, indicating the existence of at least one other gene causing dystonia in these patients. A disorder mimicking dystonia may also occur as a result of environmental causes, such as drug reaction, encephalitis (inflammation of the brain), or trauma to the head.

The children of an individual affected with dystonia due to mutations in the gene on chromosome

9 have a 50% chance of inheriting the gene mutation which causes the disease, but symptoms of dystonia occur in only 30% of individuals who inherit the dystonia gene mutation. Thus, although approximately 1 in 900 Ashkenazi Jews carries the dystonia gene mutation, only 1 in every 3,000 Ashkenazi Jewish individuals develops symptoms. Because symptoms of the disease are not always expressed, the disorder may occur in individuals with no previous family history.

In 1997 the gene responsible for torsion dystonia in Ashkenazi Jews was identified. One mutation in the gene appears to be the cause of torsion dystonia in almost all affected Ashkenazi Jews, and genealogical research has shown that this dystonia gene mutation in the Ashkenazi Jewish population came from a single mutation about 400 years ago. Genetic testing, including prenatal diagnosis, is therefore now available for Ashkenazi Jewish individuals.

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OTHER ORGANIZATIONS TO CONTACT:

For information about support groups related to genetic disease:

Alliance of Genetic Support Groups
4301 Connecticut Avenue, NW, #404
Washington, DC 20008
(202) 966-5557
(800) 336-GENE
<http://www.geneticalliance.org>

For more information about Jewish genetic disease testing:

Mount Sinai Center for Jewish Genetic Diseases
Robert J. Desnick, PhD/MD, Director
Mount Sinai Medical Center
Fifth Avenue at 100th Street
New York, NY 10029
(212) 659-6700

For information about other rare genetic conditions:

National Organization for Rare Disorders, Inc. (NORD)
P.O. Box 8923
New Fairfield, CT 06812
(800) 999-6673
(203) 746-6518
<http://www.rarediseases.org/>

For information about referrals for genetic counseling:

National Society of Genetic Counselors
233 Canterbury Drive
Wallingford, PA 19086
(610) 872-7608
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GLOSSARY OF GENETIC TERMS

amniocentesis - procedure used for prenatal diagnosis, which involves insertion of a needle through the abdomen into the amniotic fluid. This procedure is performed using ultrasound guidance, and allows the physician to obtain a small amount of amniotic fluid which can then be used for testing. Amniocentesis is usually performed between 16 and 18 weeks of pregnancy, but some centers offer "early amnio" at 14 weeks of pregnancy.

chorionic villus sampling (CVS) - procedure used for prenatal diagnosis, which involves insertion of a needle through the abdomen into fingerlike projections of the placenta which are called chorionic villi. This procedure is also performed using ultrasound guidance, and testing can be performed with the tissue obtained. Depending upon the location of the placenta, the tissue may be obtained transvaginally rather than abdominally, by inserting a catheter through the cervix and into the uterus. CVS is usually performed at 10 to 12 weeks of pregnancy.

chromosome - structures found in the nucleus of the cell, which are visible under a microscope and which contain genetic (inherited) information. Human cells contain 46 chromosomes, which come in pairs. There are twenty-two pairs of chromosomes which are referred to as autosomes, because they do not determine the sex of an individual. The twenty-third pair are referred to as the sex chromosomes, and are called the X and Y chromosomes. Each chromosome contains thousands of individual genes, which will in turn determine an individual's characteristics.

cytogenetics - the study of human chromosomes.

deoxyribonucleic acid (DNA) - the chemical sequence found in genes, and which allows for the transmission of inherited information from generation to generation.

dominant inheritance - a pattern of inheritance whereby a single gene mutation may lead to a specific genetic disease. Children of an individual affected with a dominantly inherited condition (often referred to as autosomal dominant if the gene is not located on the X or Y chromosomes) have a 50% chance to inherit the gene mutation.

enzyme - a substance that in small amounts increases the rate of a specific biochemical reaction. Often enzymes are required for the normal metabolism, or breakdown, of substances in the body.

gene - often referred to as the "unit of heredity," a gene is composed of a sequence of DNA required to produce a functional protein.

mutation - a change in the sequence of DNA. Many mutations are "silent" and do not cause disease. When mutations occur in genes and disrupt the production of a functional protein, they may lead to genetic disease.

recessive inheritance - pattern of inheritance whereby disease results only when an individual inherits two gene mutations for the particular disease. The parents of a child who is affected are said to be "carriers" of the disease, because they have one mutation and do not manifest symptoms. If both members of a couple are carriers, there is a 1 in 4 or 25% chance in each pregnancy for a child to be affected. Also referred to as autosomal recessive inheritance if the gene is not located on the X or Y chromosomes.

Resolution Adopted by the CCAR

BREAST CANCER, GENETIC TESTING, AND HEALTH INSURANCE DISCRIMINATION

*Adopted by the 108th Annual Convention of the
Central Conference of American Rabbis*

June, 1997

Background

Judaism teaches us that an individual human life is of infinite value and that the preservation of life supersedes almost all other considerations. Acting on this vital imperative, Jews have long viewed the provision of health care as a societal obligation; one which requires us to ensure that medical coverage is available to anyone regardless of financial capacity. In 1993, the UAHC affirmed this commitment in its resolution supporting universal access to health care. Now, as scientific advances have enabled doctors to detect genetic links to disease, we again reaffirm the right of all individuals to comprehensive health coverage – in this case, regardless of their genetic makeup – and we assert the importance of guaranteeing that those in our community who seek genetic testing are fully informed about both its benefits and risks. In the United States today, breast cancer is the leading cause of death for women under 50. One in every eight women will contract breast cancer in her lifetime, a dramatic increase from one in every twenty women only twenty years ago. This staggering growth has the scientific and medical communities desperately looking for causes, cures, and methods of early detection. New information about genetic mutations that are related to breast and ovarian cancer, though not conclusive, has the potential to be a great help to women in the fight against cancer.

But genetic testing creates a significant risk for discrimination by health insurance carriers. Health insurance carriers are aware that individuals with a genetic predisposition to a particular disease are more likely to develop the disease. Women with such genetic mutations may face termination of their medical insurance or, at the very least, higher premiums and coverage discrimination from insurance carriers. In addition to the devastating consequences of being denied insurance, fear of such discrimination combined with an overall lack of reliable public information on the issue of genetic links to breast cancer may cause women to avoid testing, undermining any positive effects genetic testing might have.

Recent evidence has shown that the problems of misinformation and fear of testing occurs not only in the case of genetic testing for breast cancer but for other genetic pre-dispositions as well. Genetic research has the potential for helping to discover the causes and, potentially, cures for various diseases. But participants in genetic research studies should receive appropriate counseling both before deciding whether to participate in any such studies and after the results are known.

THEREFORE, the Commission on Social Action of Reform Judaism resolves to

1. Support continued research on prevention, early detection, and treatment of breast cancer;

2. Support legislation that protects against all forms of potential discrimination by health insurance carriers arising from genetic information and inherited characteristics, including the use of such information in determining denial, limits, or increased premiums on coverage;
3. Support legislation that would prohibit health insurance carriers from requiring mandatory genetic tests, or from requesting information regarding the results of such tests;
4. Support legislation that would prohibit health insurance providers or researchers from disclosing the genetic information of an identified individual without the written consent of the individual;
5. Promote education and open dialogue within our families, congregations, and organizations on breast cancer prevention, detection and treatment, as well as genetic testing and its implications; and,
6. Encourage those in our community who seek genetic testing for any reason to also seek genetic counseling.

Resolutions Adopted by the UAHC

Adopted by the General Assembly
Union of American Hebrew Congregations
October 29-November 2, 1997 Dallas

Breast Cancer, Genetic Testing, and Health Insurance Discrimination

Background

Judaism teaches us that every individual human life is of infinite value. Although we are commanded to observe many mitzvot which serve to guide our actions and enhance our experiences, all but a small number of them may be transgressed in order to save a human life. We must even forgo the laws of our sacred Sabbath to save a person who has been injured and may die despite our efforts. The preservation of life thus supersedes almost all other considerations. As Maimonides said, The one who saves a single life, it is regarded as if that person has preserved the entire world.

Acting on this vital imperative, Jews have long viewed the provision of health care as a societal obligation; one which requires us to ensure that medical coverage is available to anyone regardless of financial capacity. In 1993, the UAHC affirmed this commitment in its resolution supporting universal access to health care. Now, as scientific advances have enabled doctors to detect genetic links to disease, we affirm the right of all individuals to comprehensive health coverage regardless of their genetic makeup, and we assert the importance of guaranteeing that those in our community who seek genetic testing are fully informed about both its benefits and risks.

In the United States today, breast cancer is the leading cause of death for women under 50. One in every eight women will contract breast cancer in her lifetime, a dramatic increase from one in every twenty women only twenty years ago. This staggering growth has the scientific and medical communities desperately looking for causes, cures, and methods of early detection. New information about genetic patterns that are related to breast and ovarian cancer, though not conclusive, has the potential to be of great help to women in the fight against cancer. But genetic testing creates a significant risk of discrimination by health insurance carriers. Health insurance carriers are aware that individuals with a genetic predisposition to a particular disease may be more likely to develop the disease. Women with such genetic predisposition's may face termination of their medical insurance or, at the very least, higher premiums and coverage discrimination from insurance carriers. We have seen this before, as President Clinton reminded us in his July 1997 address on the subject, when in the 1970s African Americans predisposed to sickle-cell anemia faced health insurance discrimination.

In addition, fear of such discrimination combined with an overall lack of reliable public information on the issue of genetic links to cancer may cause women to avoid testing, undermining any positive effects genetic testing might have. Similar fears and lack of information may discourage individuals from participating in research studies which have the potential for uncovering the causes and cures for various diseases. As President Clinton urged, we cannot afford to let our progress either in science or in extending health care to the American people to be undermined by the misuse of what is a miracle of genetic testing. Americans should never have to choose between saving their health insurance and taking tests that could save their lives. In addition, participants in genetic research studies should receive

appropriate counseling, both before deciding whether to participate in any such studies and after the results are known.

THEREFORE, the Union of American Hebrew Congregations resolves to:

1. Support continued research on prevention, early detection, and treatment of breast, prostate, and ovarian cancer;
2. Promote education and open dialogue within our families, congregations, and organizations about breast, prostate, and ovarian cancer prevention, detection, and treatment, as well as about genetic testing and its implications;
3. Encourage those who seek genetic testing for any reason to also seek genetic counseling;
4. Support legislation that would prohibit health care providers or researchers from disclosing genetic data concerning an identified individual without the written consent of the individual;
5. Commend the Clinton administration for its strong dedication to protecting both vital genetic research and individual, family, and community health care needs;
6. Support legislation that protects against all forms of potential discrimination by health insurance carriers based on genetic information and inherited characteristics, including the use of such information in determining denial of, limits to, or increased premiums on coverage; and
7. Support legislation that would prohibit health insurers from requiring genetic tests for underwriting purposes or from requesting information regarding the results of such tests