



HAUPTVERBAND DER ÖSTERREICHISCHEN
SOZIALVERSICHERUNGSTRÄGER



THE LONDON
SCHOOL OF
ECONOMICS AND
POLITICAL SCIENCE

Public Health in Austria

Case study

“Antenatal Care in Austria and Selected Countries”

Report

Date: January 2010

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Please do not cite without consent of the authors. Suggested citation:

Mossialos, E., Merkur, S., Ladurner, J., Gerger, M., Panea, R. (2010). Antenatal Care in Austria and Selected Countries. Report for the Main Association of Austrian Social Security Institutions. Vienna: Main Association of Austrian Social Security Institutions.

Introduction

Maternity care is a subject involving a wide range of stakeholders often with different perspectives, who may take different points of view. Financial and human resources used for maternity care are considerable; medical risks are significant and safety issues play a vital role due to the fact that adverse events in this field can have a long-lasting impact and sometimes lifelong consequences. Within maternity care, the area of prevention has always been important, but in recent years the attention attributed to it has become even greater.

In Austria the mother-child-pass examination programme for mothers and children was launched more than 30 years ago. Over time it has undergone some changes but still remains much like it used to be. To date, no comprehensive evaluation of the programme has been conducted which is partially due to the fact that no comprehensive electronic record of all examinations (e.g. an electronic mother-child pass) exists.

The present report consists of three chapters and an appendix. The focus is placed on antenatal care as part of maternity care. Below the topics covered in the report are detailed.

Chapter I provides an analysis of the Austrian status quo with regard to maternity care. This chapter begins by briefly describing maternity care in general¹ by outlining the relevant legal foundations, involved stakeholders, funding, service provision and current major challenges in the field. Then the mother-child-pass examination programme, a national screening programme for mothers and children, is described whereby the focus is placed entirely on antenatal care. Finally conclusions on the Austrian situation are drawn.

Chapter I was written by Joy Ladurner with inputs from Marlene Gerger. It was revised by: Johannes Gregoritsch, Walter W. Holland, Renate Fally-Kausek, Jutta Schröder and Stefan Spitzbart

Chapter II takes an international perspective and provides an overview of best practice examples for antenatal care in selected countries. The countries included in this chapter are: the UK, Germany, Switzerland, Canada, Australia, Sweden (in part) and the American Kaiser Permanente health maintenance organization (HMO). Countries and best practice examples were chosen in accordance with the Austrian situation, with the main intention being to ensure comparability of examinations and guidelines within the countries and health systems as well as applicability within the Austrian context.

Chapter II was written by Sherry Merkur and Elias Mossialos with inputs from Roland Panea. It was revised by Walter W. Holland.

Chapter III includes recommendations for Austria which are based on the findings presented in Chapter I and II. Recommendations are intended to facilitate the potential implementation of a pilot project in the narrower mother-child-pass examination programme setting in Austria.

Chapter III was written by Joy Ladurner, Sherry Merkur, Elias Mossialos and Marlene Gerger and was revised by Walter W. Holland and Stefan Spitzbart.

The **Appendix of the report is divided into two parts**, one (Appendix of Chapter I) gives further information on the Austrian situation (Appendix 1-4), the other (Appendix of Chapter II) provides additional information on the international evidence given (Appendix 1-6).

¹ Covering pregnancy, delivery and the period immediately after birth

Executive Summary

Antenatal Care in Austria

Maternity care is a subject involving a wide range of stakeholders often with different perspectives, who may take different points of view. Financial and human resources used for maternity care are considerable, medical risks are significant and safety issues play a vital role due to the fact that adverse events in this field can have a long-lasting impact and sometimes lifelong consequences. Within maternity care, the field of antenatal care and prevention has always been important, but in recent years the attention attributed to it has become even greater.

In Austria, the **development of basic legislation** concerning the welfare of mothers, infants and children is under the authority of central government; whereas the responsibility for the **executive legislation** (i.e., enforcement and implementation) lies with the regions (*Länder*). It is the duty of the regions to provide public health services which, to a great extent, delegate this task to the district or local authorities. **Stakeholders** involved in maternity care in Austria as well as their responsibilities are detailed in the project report “Antenatal care in Austria and selected countries”.

Social health insurance funds provide benefits in cash and in kind for the insured and their dependants in the insured event of maternity. Services in kind involve medical care, screening, the assistance of midwives, medicines, delivery in a hospital, birth clinic or at home. Health insurance funds are also responsible for covering 30% of the expenses resulting from the provision of maternity cash benefits and 1/3 of the expenses arising from mother-child-pass examinations. The remaining amount is in both cases covered by means from the Family Burdens Equalisation Fund.

Antenatal care in Austria involves a variety of services capturing all levels of the health system (national, regional, local). All pregnant women in Austria receive the support of various institutions and service providers during pregnancy.

In connection with and as a consequence of pregnancy and birth, mothers and their children can be subject to various **risks and challenges**. These include infant mortality, maternal mortality, still birth, miscarriage, malformation, termination of pregnancy, preterm birth and high risk pregnancies. Preterm birth and illnesses of the mother appear to play a considerable role in Austria.

With regard to antenatal care, a strong focus is placed on the **mother-child-pass examination programme**, a national screening programme which intends to monitor the health of mothers and their children during pregnancy and up to the 62nd month of the child’s life. The programme was launched more than 30 years ago (in 1974) and is planned, implemented and overseen by the Ministry of Health (BMG) which is advised by the mother-child-pass committee, a sub-committee of the Supreme Sanitary Council. The programme pursues the following aims: ensuring basic medical care and prevention for pregnant women and their children; promoting early detection and timely treatment of health risks; and facilitating the monitoring of the development status of children.

The mother-child-pass examination programme involves five examinations of the pregnant woman and nine of the child, ultrasound examinations not yet included. It spans a timeframe of about 70 months, beginning with the first diagnosis of pregnancy and lasting until the 62nd month of the child’s life. Examinations performed within the mother-child-pass examination programme are described in detail in the case study report.

As part of the programme, all pregnant women receive a **mother-child pass** which is a booklet documenting all examinations and their results. Together with the pass women receive an additional information booklet containing advice and information on a variety of relevant topics. It is issued by the BMG and represents an official document. Together with the pass, women receive an international certificate of vaccination for their child.

The **provision of mother-child-pass examinations** is mostly undertaken by contract providers of social health insurance funds in their practices. Hospitals do not conduct mother-child-pass examinations. However, hospital may become involved if complications arise which could potentially result in the woman being admitted for inpatient care. Hospitals also provide selected services related to prenatal diagnostics (e.g. in the case of risk pregnancies).

All examinations listed in the mother-child pass are free of charge for mothers and their children. Also, women residing in Austria who do not have Austrian nationality or those not covered by social health insurance are entitled to take part in the programme.

The mother-child-pass examination programme is a **physician-focussed programme**, involving physicians only; nurses or midwives are not part of the programme. Midwives have repeatedly demanded involvement in the programme.

Advice given to pregnant women in Austria is only partially standardised. It is provided either in written form or orally. If a woman wishes to be well informed, the degree of information will to a certain extent depend on her own initiative. The main sources of information are the accompanying booklet which mothers receive together with the mother-child pass and the advice given to them by their attending health service provider/s. The advice given and the method of communication of physicians are not standardised and may be subject to great variation. Several **guidelines or recommendations** on antenatal care/care provided during pregnancy have either been developed in Austria or international guidelines have been adapted to the Austrian circumstances. No overview of all relevant guidelines exists; they are usually published by the individual stakeholder organisations (e.g. medical societies). It is not known to what extent guidelines are adhered to or whether pregnant women are actually aware of their existence.

With regard to the **reimbursement** of services which are provided in kind as part of the mother-child-pass examination programme by contract providers of social health insurance, the Main Association of Austrian Social Insurance Institutions (*Hauptverband*) is responsible for the negotiation and signing of the general contract (on the implementation of mother-child-pass examinations) with the Austrian Medical Association. Not all services provided to women and children in the course of the examinations are reimbursed based on joint national tariffs (applicable to all health insurance funds), which are the result of the aforementioned general contract (or additional agreements). This only applies to 21 tariff positions denominated special mother-child benefits. Other services provided as part of the mother-child-pass examination programme are reimbursed according to reimbursement catalogues for curative care (e.g., basic remuneration per case or per time period, laboratory tests or ultrasound examinations).

Statistics of social health insurance do not consider the services provided by private physicians, who have not signed a contract with social health insurance. The number of women who visit a private gynaecologist in Austria may be significant. However, recent data of individual social health insurance funds cannot be compared with data from before 2002 due to a change in the documentation system.

The mother-child-pass examination programme seems to generally be **well accepted** by Austrian women. This assumption can be made based on fairly high attendance rates (between 70% for the first gynaecological examination and 50% for the internal/physical examination) as well as other benefits perceived by the women utilising the services. Attendance rates could however still be improved, especially because they drop over time and appear to be influenced by financial incentives (changes in child benefit). Upper Austria is the only region offering an additional financial incentive to mothers who undergo all examinations and certain defined vaccinations. Very little research has been conducted with regard to reasons for non attendance and reduced attendance over time.

Although the Austrian mother-child-pass examination programme has existed for more than 30 years, to date no comprehensive **evaluation** of the programme has been undertaken. There have only been a few isolated and not standardised attempts at analysis, which have proven to be extremely difficult due to the fact that no complete electronic record of the data exists. Electronic data are scattered among providers (mostly gynaecologists), and mothers are the only ones who possess the complete data in the form of the mother-child pass booklet, which contains hand written comments of the attending physicians.

The production of an **electronic mother-child pass** is being discussed, but implementation plans are met by a variety of obstacles. These include the observations that: data are recorded by different health professionals and institutions; complicated data protection issues prevent linkages between the systems and the ability to analyse person-based data; physicians fear to be monitored and controlled; and physicians would most likely demand more money for additional documentation services.

No **regular revision of the mother-child-pass examination programme** is undertaken. Procedures involving changes and revisions do not follow a standardised pattern and lack transparency. Actions are motivated by publications in the professional literature, suggestions by experts, or current events. Suggestions are discussed among the members of the mother-child-pass committee. Usually the chair assigns a committee member to perform more research on a defined topic and then present the findings to the other members.

Little **research on outcomes** of the mother-child-pass examination programme exists in Austria. In the literature, time trends of defined outcomes are looked into (e.g. infant death) and publications indicate that outcomes have improved since the introduction of the examination programme. It is however not possible to establish a causal relationship between any change in the outcomes over time and the examination programme. This is largely due to the fact that no database exists and no evaluation has been undertaken of the programme as yet.

Antenatal Care – International evidence

The case study report, *Antenatal Care – International evidence*, aims to highlight antenatal care practice in a group of selected country settings. Extensive examples of evidence-based guidelines in the United Kingdom, Germany, Switzerland, Canada, Australia, Sweden (in part) and the American Kaiser Permanente health maintenance organization are presented, which are intended to serve as a reference point when analysing antenatal care in Austria.

The report is focused on the antenatal care delivered to nulliparous women with no associated medical conditions during pregnancy. In particular, two aspects of antenatal care are examined: advice given to pregnant women with regard to lifestyle behaviours (15 topics) and the clinical practice guidelines on medical interventions undertaken during pregnancy (12 topics). The report also focuses on antenatal care interventions which are considered to be not effective in terms of health outcomes or not cost-effective.

The accompanying Appendix to the report provides six tables that allow the direct comparison of the antenatal care in the selected country settings, and can serve as a summary of the findings presented throughout the report.

Recommendations

The table below presents the current Austrian situation and the related recommendations as devised by the study team. These recommendations should be viewed in a wider context, i.e. in connection with their effect on the mother-child-pass examination programme and with regard to their potential impact on overall maternity care in Austria.

Austrian situation	Related recommendation
General	
In Austria, there is a medical emphasis on health services for pregnant women and their children. This is partially due to this area being largely restricted to the mother-child-pass examination programme which is outlined in the mother-child-pass booklet and involves medical services only.	Any potential changes to antenatal care in Austria should take a broader public health view, including considering maternity care issues beyond antenatal care; the involvement of other policy areas in addition to health; and labour market issues. A health plan for maternity care services could be developed going beyond only medical services and focusing on the mother-child-pass examination booklet. Such a programme could envision health targets, implementation processes and communication policies. Also, clear national and regional priorities (e.g. targets) and transparent responsibilities and processes should be developed. The needs of pregnant women ought to be identified and additional means for a health orientated strategy for mothers and their children should be developed. This should go beyond strictly medical services to include other mechanisms and options which could promote and strengthen the health of mothers and their children (e.g. lifestyle recommendations, health education, etc.)
Responsibilities	
Currently the legal responsibility of social health insurance (SHI) to provide preventative services is limited. However, SHI funds pay for one-third of the expenses resulting from the mother-child-pass examination programme.	Responsibilities for maternity care with regard to the provision and funding of services should be clearly defined in terms of: who should pay for which services; where services should be provided; and who is responsible for giving advice to pregnant women. The role of social health insurance with respect to prevention should be discussed and could be followed by potential changes of legislation.
Communication, Co-operation	
Currently only one national board for maternity care exists in Austria, namely the sub-committee of the Supreme Sanitary Council. By being embedded in this structure the procedures and activities of the committee are barely known to external stakeholders (even experts in the field), lack transparency and are not communicated to the public.	Communication on maternity care/antenatal care issues and related processes should be more transparent on a policy-maker level. The mother-child-committee of the Supreme Sanitary Council should be supplemented by a comprehensive public board including all relevant stakeholders/decision-makers (from various levels and interest groups: national level, regional level, social health insurance, physicians, etc.).
Health services provision	
Services in connection with antenatal screening are often provided in outpatient departments of hospitals where services are mostly reimbursed by a lump sum or in a few cases based on the actual services provided. Sometimes services are provided in specialised centres for prenatal diagnostics.	Transfers of patients from physicians in practices to hospitals or centres for prenatal diagnostics should be standardised. If antenatal screening of any kind is provided to mothers the grounds on which it is performed must be clearly defined and supported by evidence. Furthermore women have to receive adequate advice to take informed decisions and ought to be supported by adequate follow-up measures. The number of outpatient cases in hospitals involving pregnant women could be monitored over time and reimbursement reconsidered. A newly developed maternity programme should not only focus on medical services, but take a broader public health view towards the subject.
Some pregnant women suffer from medical conditions which may require special attention before, during and after pregnancy.	Risk pregnancies in general and women with such conditions could be identified and addressed specifically. Approaches could for instance involve case management thereby ensuring that involved health providers

Conditions could for instance be chronic illnesses (e.g. high blood pressure, diabetes, asthma, etc.) or mental illnesses.

Research

Premature birth seems to be one of the greatest challenges of pregnancy in Austria, and regional differences persist.

Equity issues

The provision of services is often not standardised which means the quality of services provided by individual physicians may vary. The quality of services may also vary depending on various criteria, e.g. the physician’s time constraints.

Socially disadvantaged groups may have problems accessing services (e.g., due to not having sufficient information, not speaking German, or not attaching a high priority to health services).

At present, the mother-child-pass booklet is only available in German. Mothers who are not proficient in German may have difficulties following the examination programme and understanding the documented treatment results.

Evaluation

The Austrian mother-child-pass examination programme has existed since 1974, but to date no comprehensive evaluation of the programme has been undertaken.

Health professionals

The Austrian mother-child-pass examination programme is physician-focused. Midwives or nurses are at present not involved in health promotion and public health activities.

(e.g. gynaecologist and psychiatrist) co-operate closely with each other and the patient (e.g. with regard to medication, risk factors, prevention and health promotion activities).

Further research on premature birth should be conducted, especially looking into time trends and regional differences to determine whether these are based in population differences or health service differences. Equal access to services should be provided for all pregnant women in Austria. Further research on social inequalities should be conducted, e.g. looking at differences in health service utilisation/access to examinations of the mother-child-pass examination programme, and identifying the women not participating in the programme (checking for regional differences, migrant background, income, education, etc.)

Health services of the mother-child-examination programme should be defined more closely. Towards the provision of more consistent care, physicians should be supported by clinical guidelines. Thereby a defined state of the art should be achieved. Also referral requirements ought to be standardised to the extent possible.

This aspect ought to be subject of further research so that disadvantaged groups can be identified and addressed adequately. Standards and guidelines should be promoted and emphasise equal access.

The main aspects of the mother-child-pass could be provided in translated versions (e.g. double headings). Also, information on maternity services should be available in different languages. If required, translation services ought to be provided.

The current status quo needs to be assessed through an evaluation of the mother-child-pass-examination data and the entire programme.

Suggestions to change the examination programme, involving the inclusion/exclusion of certain items, should be transparent and supported by evidence.

Revisions should not be limited to effects on the mother-child-pass examination programme, but take a broader public health and health promotion view as well as taking consideration of potentially relevant outcomes for maternity care in general

Existing guidelines for antenatal care need to be assessed with regard to their quality and need to be updated with current clinical knowledge. They should be consolidated and their existence communicated to potential users. Joint guidelines and standards should be developed to assist structured implementation of a maternity care programme. A multidisciplinary committee including all main stakeholders should be founded to discuss the findings of the present case study and define priorities for follow-up activities.

The involvement of other health professionals (e.g. midwives, nurses and psychologists) in public health services in general, and specifically in maternity and child services and the mother-child-pass examination programme, should be discussed. For this purpose a taskforce could be established. Models applied in other countries should be assessed and used as best-practice examples where appropriate.

Documentation, IT

No comprehensive electronic version of the mother-child-pass examination programme exists. Electronic data are spread among the various providers visited by the pregnant woman, information in the mother-child-pass (i.e., test and examination results) are filled out in handwriting by the attending physician.

Structure and contents of antenatal care examinations

As part of the Austrian mother-child-pass examination programme physicians have to perform a comprehensive anamnesis and are obliged to document irregularities occurring during pregnancy. No instructions are given on how irregularities are to be diagnosed and on the relevant follow-up activities which should be undertaken in this context.

Information given to pregnant women

The provision of services is often not standardised which means the quality of services provided by individual physicians may vary. Socially disadvantaged groups may have problems accessing services. At present, the mother-child-pass booklet is only available in German.

Austrian women receive standardised lifestyle and pregnancy information in the form of a brochure which is given to them with the mother-child-pass booklet. Neither the mother-child-pass examination programme nor the supplementary brochure to the mother-child-pass refers to the intake of folic acid, iodine, magnesium or vitamin A.

Several interesting pilot projects and initiatives for maternity care are taking place in Austria.

The complete mother-child-pass should be available in the form of an electronic file which could be accessed by the relevant health providers and the patient (and parts of it by social health insurance: for billing/granting of child-care benefit). Social health insurance funds could ensure that any curative services provided by their contract providers are coded in a way making them identifiable as services provided in connection with maternity care/the mother-child-pass examination programme. So far only 21 national tariff positions exist.

When considering the recommendations, it is important to be aware that there may not be one gold standard (e.g. for a procedure, the frequency of an intervention, the amount of resources needed, etc.), but instead there may be a number of models or approaches which include appropriate and effective elements. The international guidelines examined in the report give advice on common health problems during pregnancy. Examinations of the Austrian mother-child-pass examination programme should be supported by guidelines and recommendations. International guidelines should be reviewed to assess comprehensiveness of the symptoms covered in the Austrian brochure.

See section on Equity issues

It should be clearly defined who is responsible for providing which information to pregnant women. Provision of information could be stratified based on various aspects: Pregnancy experience of the mother; risk of the pregnancy; place of delivery. Diagnosis and treatment related to mother-child-pass examinations could, to the extent possible, be standardised and should follow guidelines. Information should be available in various languages, if this is not already the case. Standard procedures for dealing with non-German speaking women could be defined. Religious beliefs of the patient should, to the extent possible, be taken into consideration. Any oral information provided to the mother during mother-child-pass examinations (e.g. on alcohol, smoking, illicit drugs, medicines, physical activity, travel, dietary recommendations, and dietary supplements) should be standardised and based on international evidence.

Pilot projects or initiatives from one region could be evaluated and applied in other regions/by other health insurance funds. These could include: the child bonus of Upper Austria; the smoking cessation programme targeted at pregnant women programme by the regional health insurance fund of Styria; and the initiatives of Vienna, including the telephone hotline, psychosocial counselling, etc.

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Appendix: see separate document

Appendices of Chapter I
 Appendices of Chapter II

List of abbreviations

AGES	Agentur für Gesundheit und Ernährungssicherheit/Austrian Agency for Health and Food Safety
ASVG	Allgemeines Sozialversicherungsgesetz/General Social Insurance Act
BMG	Bundesministerium für Gesundheit/Federal Ministry of Health (then BMGFJ)
BMGFJ	Bundesministerium für Gesundheit, Familie und Jugend/Federal Ministry of Health, Family and Youth
BMSG	Bundesministerium für Soziale Sicherheit und Generationen/Federal Ministry of Social Security and Generations
BMSK	Bundesministerium für Arbeit, Soziales und Konsumentenschutz/Federal Ministry of Labour, Social Affairs and Consumer Protection
BMWFJ	Bundesministerium für Wirtschaft, Familie und Jugend/Federal Ministry of Economy, Family and Youth
ELGA	Elektronische Gesundheitsakte/Electronic Health Record
EU	Europäische Union/European Union
FLAF	Familienlastenausgleichsfonds/Family Burdens Equalisation Fund
GP	General Practitioner/Arzt für Allgemeinmedizin
HELLP	Hemolytic anemia, Elevated Liver enzymes and, Low Platelet count
HIV	Human immunodeficiency virus/Humanes Immundefizienz-Virus
HVB, Hauptverband	Hauptverband der österreichischen Sozialversicherungsträger/Main Association of Austrian Social Insurance Institutions
IVF	In-vitro-fertilisation
KBG	Kinderbetreuungsgeld/Child Care Benefit
KBGG	Kinderbetreuungsgeldgesetz/Child Care Benefits Act
MuKi-Pass	Mutter-Kind-Pass, Mother-Child-Pass
MuKiPassV	Mutter-Kind-Pass-Verordnung/Mother-child-pass-directive
OSR	Oberster Sanitätsrat/Supreme Sanitary Council
oGTT	Oral Glucose Tolerance Test
PAP	Papanicolaou
RH	Rhesus factor/Rhesus Faktor
SHI	Social health insurance
SID	Sudden Infant Death/Plötzlicher Kindstod
TOPFA	Terminations of pregnancy for fetal anomaly following prenatal diagnosis

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CHAPTER I: THE AUSTRIAN SITUATION

Introduction

The first section of Chapter I contains a description of maternity care in Austria, thereby focussing on services provided during pregnancy, at birth and immediately after birth. It is structured as follows: Initially a brief overview of the responsibilities for planning and organisation and the relevant legal foundations is given. This is followed by a section detailing the different stakeholders involved in maternity care and describing their responsibilities. Next current challenges in connection with antenatal care and delivery are covered. The first section concludes by listing information given to pregnant women in Austria.

The second section of Chapter I focuses on the Austrian mother-child-pass examination programme (*Mutter-Kind-Pass Vorsorgeprogramm*) and gives information on its legal background and historical development, the stakeholders involved, the funding and the examinations undertaken in the course of the programme as well as looking into aspects such as documentation, participation rates and outcomes.

The third section briefly summarises the findings of sections 1 and 2, describes future plans and activities, and draws conclusions.

During the compilation of the study elections took place in Austria and a new government was formed. In December 2008 the newly appointed minister of health Alois Stöger replaced Andrea Kdolsky. As result of the re-formation of government, the division of responsibilities was changed whereby the Ministry of Health transferred the agendas of Family and Youth to the newly formed Ministry of Economy, Family and Youth (*Bundesministerium für Wirtschaft, Familie und Jugend*, BMFJ).

Methodology

Work on the Austrian part of the case study project “Maternity Care” involved a review of the literature, thereby focussing on literature relevant for the national context. Stakeholders in the field were identified and contacted. The main sources of information used for the compilation of the Austrian part of the report were the collected literature, the relevant legislation, inputs from expert interviews and data resources/statistics.

As mentioned before, the present study focuses on antenatal care only. Recommendations also consider the wider setting and emphasise the need for a broader public health perspective.

For the description of the Austrian situation, two expert interviews were undertaken, one with a representative of the Federal Ministry of Health (then Federal Ministry of Health, Family and Youth) and one with an expert from social insurance.

In order to gain some insight into the practical execution of the mother-child-pass examination programme a questionnaire was developed by the author and sent to six gynaecologists, five midwives and one neonatologist. Five gynaecologists, seven midwives and one neonatologist responded by filling out the questionnaire. Three midwives had passed on the questionnaire to colleagues who also answered the questionnaire, one did not respond. Gynaecologists and midwives were chosen as recipients because they are the professionals most involved in maternity care in Austria. The neonatologist was asked for his/her opinion because he/she deals with complications affecting the child immediately after birth and these may be related to antenatal care. Prior to forwarding the questionnaire to the health professionals it was revised by two psychologists and pre-tested by two gynaecologists.

Within the small sample it was intended to include professionals from different regions in Austria (Salzburg, Styria and Vienna) and from different work backgrounds (hospital, private practice/self-employed basis). Findings of these expert opinions are only briefly mentioned in the present report where applicable. A summary can be found in Annex 1. It is very important to be aware of the limitations of such an investigation. Answers of the consulted health professionals do not represent facts but reflect their personal opinions. They may however provide interesting information on the actual situation and give hints on aspects or questions which could be subject of further analysis.

1. Maternity Care in Austria

In this first general section, maternity care involves all services provided to women during pregnancy, at birth and immediately after birth. The second section focuses on antenatal care only.

1.1 Planning and organisation

According to article 12 of the Federal Constitutional Act, the development of basic legislation concerning the welfare of mothers, infants and the young is under the authority of central government whereas the responsibility for the executive legislation (enforcement, implementation) lies with the regions (*Länder*). It is the duty of the regions to provide public health services which, to a great extent, delegate this task to the district or local authorities.

1.2 Legal foundations

Below the most relevant legal foundations for maternity care in Austria are listed:

- Federal Constitutional Act (*Bundesverfassungsgesetz*), B-VG, BGBl. 1013/1994
- General Austrian Social Insurance Act (*Allgemeines Sozialversicherungsgesetz*), ASVG, BGBl. 189/1955
- Family Burdens Equalisation Act 1967 (*Familienlastenausgleichsgesetz*), FLAG, BGBl. 376/1967
- Mother-Child-Pass-Directive 2002 (*Mutter-Kind-Pass-Verordnung*), MuKiPassV, BGBl. 470/2001, followed by an amendment in 2008, BGBl. II Nr. 430/2008² and by another amendment in 2009, BGBl. 448/2009 thereby annulling the previous amendment 430/2008.
- Child Benefit Act (*Kinderbetreuungsgeldgesetz*), KGG, BGBl. 103/2001, followed by an amendment in 2009, BGBl. I Nr. 116/2009
- Maternity Benefit Act (*Karenzgeldgesetz*), KGG, BLGl. 47/1997

As mentioned in section 1.1, the Federal Constitutional Act defines the responsibilities of the Federation and the regions.

The General Social Insurance Act and the Insurance Acts for the other groups of the population covered by social insurance (self-employed, farmers, railwaymen and miners) contain regulations on the scope, the entitlement and the funding of maternity benefits provided by social health insurance.

The Family Burdens Equalisation Act regulates the provision of any benefits for family policy measures such as the family benefit, subsidies for transportation or school books, the child benefit or special benefits for hospice care (of family members).

The Mother-Child-Pass Directive regulates issues in connection with the mother-child-pass examination programme such as listing the different examinations which have to be undertaken as part of the programme. The Directive was amended in December 2008 and again in December 2009. For further details on changes see sections 1.6.8, 2.6 and 2.10.

The Child Benefit Act regulates the provision of the child benefit and the additional subsidy to the child benefit.

Other legislation in connection with maternity care involves the Mother Protection Act (*Mutterschutzgesetz*), the Parents-Maternity/Paternity Leave Act (*Elternkarenzurlaubsgesetz*), the Insurance Act of the Unemployed (*Arbeitslosenversicherungsgesetz*) or the Labour- and Social Court Law Act (*Arbeits- und Sozialgerichtsgesetz*).

Further regulations relevant for maternity care are the contractual agreements between social health insurance and their contract providers (physicians, midwives, hospitals, pharmacies, etc.) and the contracts settled between private health insurance companies and their contract partners. For further information on legislation please refer to section 2.2.

² <http://www.sbg.ac.at/ver/links/bgbl/2008b430.pdf>, accessed on 9 July 2009

1.3 Funding

Social health insurance funds reimburse services for their insured population (and partially also for the dependants of their insured population) that are required in connection with the insured event of maternity. Services involve medical care, the assistance of midwives, medicines, etc. as well as reimbursement of birth in a hospital, birth clinic or at home. Detailed information on maternity services provided by social health insurance is given in sections 1.4. and 1.5 of the present report.

Social health insurance funds are, based on the Social insurance Acts, responsible for paying 30 percent of the expenses resulting from the provision of maternity cash benefits³ to women of their insured population. The remaining amount is covered by means from the Family Burdens Equalisation Fund.

Inpatient services for the insured and their dependants are paid by social health insurance funds in the form of a yearly lump sum payment and include any services provided as inpatient, outpatient, semi-inpatient or day clinic services but exclude services provided in connection with the mother-child-pass examination programme.

Expenditures of social health insurance for maternity benefits accounted for close to 4% of total social health insurance expenditure, about €503 million in 2007. Of this total about €32 million (6%) were used for services by midwives and physicians, around €98 million (19%) for inpatient care, €373 million (74%) for maternity cash benefits (including €1.7 million for business assistance services and part time assistance services, which more or less feature the maternity benefits for self-employed insured).

In the year 2007 social health insurance provided services for 70,980 deliveries. The average length of a hospital stay in connection with a delivery was 6.2 days.⁴

As mentioned before, various maternity benefits in cash and in kind are partially funded through the Family Burdens Equalisation Fund which is administered by the Federal Ministry of Economy, Family and Youth (prior to the re-organisation of government this was the duty of the then Federal Ministry of Health, Family and Youth, now Federal Ministry of Health). The Family Burdens Equalisation Fund is composed of financial resources from employers, income tax, shares of corporate income tax and income tax in accordance with the respective Finance Equalisation Act, contributions originating from agriculture and forestry and from the regions. Its means are earmarked for family policy services.

³ For more details see section 1.5 specifically on social insurance benefits

⁴ Main Association of Austrian Social Insurance Institutions (2008). Statistical Handbook 2007. Vienna. 2008

1.4 Stakeholders

The following table provides an overview of the main stakeholders involved in maternity care in Austria and their responsibilities.

Table 1: Maternity care in Austria: Stakeholders and their responsibilities

Stakeholder	Responsibility
<p>Federal Ministry of Health <i>Bundesministerium für Gesundheit, BMG</i>) Section II Consumer Health and Prevention, department A/2 Prevention and health promotion</p>	<ul style="list-style-type: none"> - Developing and enforcing basic legislation concerning the mother-child-pass-examination programme - Co-ordination of involved stakeholders - Planning of health resources - Compensation of mother-child-pass services through means originating from the FLAF: maternity benefit, expenses for mother-child-pass examinations - Verification of the final accounts of the Hauptverband concerning expenses of the social health insurance funds for mother-child-pass examinations and maternity benefits - Co-ordination, preparation and follow-up of the meetings of the mother-child-pass-committee - Liaising with experts in the field of maternity care - Commissioning the printing of the mother-child passes and their delivery to the regions - Commissioning of research - Publication of reports and information material (e.g. brochures)
<p>Federal Ministry of Economy, Family and Youth/<i>Bundesministerium für Wirtschaft, Familie und Jugend, BMWFJ</i></p>	<ul style="list-style-type: none"> - Developing of legislation - Allocation of funds to the FLAF (Family Burdens Equalisation Fund) and administration of the FLAF
<p>Federal Ministry of Labour, Social Affairs and Consumer Protection/<i>Bundesministerium für Arbeit, Soziales und Konsumentenschutz</i></p>	<ul style="list-style-type: none"> - Dealing with legal issues of maternity, early maternity and maternity leave as related to labour issues
<p>Federal Ministry of Women and Public Service/<i>Bundesministerium für Frauen und Öffentlicher Dienst</i></p>	<ul style="list-style-type: none"> - Dealing with matters for equal treatment of women in the labour market: e.g. the child benefit
<p>Supreme Sanitary Council/<i>Oberster Sanitätsrat, OSR</i></p>	<ul style="list-style-type: none"> - Expert advisory committee advising the Ministry of Health
<p>Regions/Länder * Health departments of the regional authorities * Regional sanitation directorates/<i>Landessanitätsdirektionen</i></p>	<ul style="list-style-type: none"> - Enforcing and implementing executive legislation concerning the welfare of mothers, infants and youth - Providing regional maternity services

Table 1 continued

Municipalities Magistrates and district authorities	Provision of local maternity services such as (exemplary): <ul style="list-style-type: none"> - Vaccinations - Counselling, information in mother-child-centres Issuing of confirmations for incapability to work (early maternity leave)
Social health insurance funds	<ul style="list-style-type: none"> - Ensuring accessible and high quality care provided by contract partners - Planning and distribution of resources (providers) - Documentation and reimbursement of maternity services billed by contract providers (provided in connection with the insured event of maternity) - Reimbursement of the stay in a hospital or in a birth clinic for a maximum of 10 days following delivery - Reimbursement of expenses in connection with a home birth - Partial funding of the maternity cash benefit (30%) - Partial funding of examinations undertaken as part of mother-child-pass examination programme (one third) - Reporting (of data) to the Hauptverband - Provision of maternity services in institutions owned by them - Analysis of service provision data - Monitoring of service providers
Main Association of Austrian Social Insurance Institutions/Hauptverband der österreichischen Sozialversicherungsträger	<ul style="list-style-type: none"> - Signing of general contracts (for curative services) with professional representations of health service providers: Austrian Medical Association, Board of Midwives, etc. - Negotiation of tariffs for and signing of general contract for the execution of mother-child-pass examinations with the Austrian Medical Association - Administration of statistics on the utilisation of maternity benefits - Administration of the maternity cash benefit - Calculation of refunds (maternity care, mother-child-pass examinations) from the FLAF to the health insurance funds
Professional bodies * Austrian Medical Association * Board of Midwives	<ul style="list-style-type: none"> - Negotiation of general contracts with the Hauptverband - Signing of general contracts

Table 1 continued

Health service providers⁵: * physicians * midwives * nurses * physiotherapists * hospitals * pharmacies, etc.	- Provision of high quality, up-to date and patient-centred care - Patient documentation - Cooperation with other health service providers - Initiating further treatment if required (referrals) - Continuing education, research <u>Contract providers:</u> - Signing of individual contract with health insurance funds for the provision of curative services and meeting contract terms
Mothers	- Utilisation of maternity benefits (national level, regional level, local level) - Communication with health providers, social health insurance and public health authorities - Recording of relevant data (e.g. mother-child pass, vaccination certificate)
Others: * Providers of birth-preparation classes * Mother-child centres * Counselling centres for mothers * Providers of genetic testing * Centres for prenatal diagnostics * Providers of in-vitro-fertilisation services * Private health providers	- Provision of specialised services such as - Information, counselling, - Tests

Source: Authors' own illustration

1.5 Scope of maternity care and benefits

All pregnant women in Austria receive the support of various institutions and service providers during pregnancy. As soon as the woman finds out that she is pregnant she receives a mother-child pass, usually from her attending gynaecologist. This pass is required for participation in the mother-child-pass examination programme, a national screening programme intended to accompany and monitor the health of mothers and their children during pregnancy and up to the 62nd month of the child's life. More details on the programme can be found in section 2 of this report.

In the course of the maternal examinations detailed in the mother-child pass, the pregnant woman will usually visit the following doctors and/or institutions:

- a gynaecologist or a GP (for the gynaecological examinations)
- a radiologist or a gynaecologist (for ultrasound examinations): most women undertake these examinations at their gynaecologist's office
- a doctor of internal medicine or a GP (internal/physical examination)

⁵ Nurses and midwives are different professions in Austria. They still mostly undergo different training (nursing school vs. university of applied sciences) and applicants have to meet diverse entry requirements.

⁵ Recently the legislation basis has been created to provide training for nurses at universities of applied science. Only few regions have taken this option up so far and offer programmes. Implications of this change are highly complex in many ways and require further discussion.

- a laboratory: normally the GP or gynaecologist refers the pregnant woman to a laboratory to have a blood sample taken and analysed. Some GPs may draw the sample themselves and then send it to the laboratory.

Other health providers involved in maternity care are pathologists/cytologists or specialists for laboratory medicine with an additional training in cytology who analyse the test results of PAP-smears undertaken by the gynaecologist or the GP during the first gynaecological anamnesis.

In preparation for birth and during delivery some women decide to utilise the services of a midwife.⁶ Part of these may have to be paid for out-of-pocket. A midwife is present at the birth in any hospital. She cannot be freely chosen by the woman but is assigned to the birth by the hospital. The gynaecological department of the regional hospital in Klagenfurt (Carinthia) has started a pilot project whereby midwives work as nurses in the delivery ward.

Place of delivery

The majority of Austrian women (about 98.6%) decide to give birth in a hospital or birth clinic⁷; the remaining women (1.4%) choose to deliver their baby at home.⁸ Some women who do not experience any complications choose to give birth in the outpatient department and leave the hospital with their baby soon afterwards. Others are admitted for several days of inpatient care.

Normally women can choose the hospital in which they wish to deliver their baby. In the occurrence of unforeseen events it may however be necessary to consult the nearest hospital or to transfer the mother or child to another hospital hosting specialised facilities (for instance a department of neonatology). Some women will require ambulance services to take them to hospital.

Women who have given birth usually spend several days in hospital before returning home. If a woman remains in hospital for longer than ten days, the remaining stay is, in social health insurance terms, not classified as an insured event of maternity but as an insured event of illness (of the mother or the child).

Involved health professionals

Physicians practise either in private practices, are employed in hospitals or work both in the inpatient- and the outpatient setting. Some gynaecologists accompany their patients to a private hospital for the delivery. This is only possible for patients with private health insurance. GPs consulted in connection with maternity care normally work in practices.

Midwives operate on a self-employed basis or are employed by hospitals. Some combine both. Those employed by hospitals are only present at birth. Services of self-employed midwives are more comprehensive; the woman is often accompanied by the midwife and prepared for the delivery throughout the pregnancy. These services are only partially covered by social health insurance. The city of Vienna has initiated a programme whereby it offers women the assistance of a family midwife who is intended for pregnant women experiencing health problems or stressful situations. She can provide assistance with birth preparation (in the form of courses), individual counselling or the counselling of couples. Home visits are also possible.⁹

During pregnancy, mothers may need to consult other medical specialists (other than gynaecologists, GPs or doctors of internal medicine). Consultations can be related to pregnancy or to a health problem independent from pregnancy. At birth or following birth sometimes, in the interest of the mother or the child, nurses, neonatologists, paediatricians and/or paediatric surgeons may be involved. Some pregnant women visit hospitals for specific antenatal care (examinations undertaken in outpatient departments involve prenatal diagnostics, e.g. Doppler sonography, amniocentesis, etc., while inpatient care involves closer monitoring, e.g. risk of preterm birth).

⁶ Midwives and nurses are separate professions in Austria, requiring different training and entailing different responsibilities

⁷ A hospital specialised in gynaecology and obstetrics

⁸ Statistik Austria (2007). Yearbook of Health Statistics 2006. Vienna.

⁹ Department MA 15, Health services of the city of Vienna. Information leaflet on family midwives. Received 7 November 2008

Complications and consultations before delivery

In case of complications (e.g. risk of preterm birth) some women receive the order from their attending gynaecologist to rest, stay at home (bed rest) or to even go into hospital. If these women are still working and are not yet on maternity leave, they receive a confirmation stating their prohibition to work which is usually issued by a local public health officer. With this confirmation they are entitled to apply for premature payment of the maternity cash benefit at their social health insurance fund.

Several hospitals and birth clinics offer consultations to pregnant women shortly before the delivery during which they are informed about the circumstances of the delivery, the responsibilities of the different health professionals involved, potential risks as well as the possibility of having to transfer the baby to another department, for instance the department of neonatology, when necessary. Women are encouraged to ask questions and discuss uncertainties. Such consultations are voluntary activities of the hospitals and can involve a gynaecologist, a midwife, a neonatologist and/or a paediatrician.

At a hospital birth a midwife is present. Often, in case a doctor is required, the initial step is to call the physician on call who will mostly be either a physician in training to become a GP (doing his rotation) or a physician in training to become a specialist. In case further medical expertise is needed, the senior physician is consulted. If required an anaesthetist can also be involved. In the event of complications during birth affecting the mother the procedure described above is followed. In case complications affect the baby, a paediatrician, a child surgeon and/or a neonatologist is consulted and is available within a short time.

Sometimes newborns have to spend additional time in hospital or may have to be readmitted soon after birth. Usually infants who remain in hospital are transferred either to the child intensive care unit or to the Department of Neonatology. The latter occurs if the newborn displays postpartal complications such as an infection, sepsis or jaundice. Admission to the Department of Child Surgery may be necessary in case the infant has to be readmitted to hospital a while after discharge due to an accident or scald. If a hospital does not have a Department of Child Surgery or of Neonatology the baby will have to be transferred to an appropriate hospital.

Other relevant institutions, health professionals and stakeholders

Other institutions or health professionals offering their services to pregnant women are special centres or clinics for prenatal diagnostics, public health officers at municipal health authorities (issuing confirmations of premature maternity leave, providing vaccination services, etc.) and/or providers offering genetic testing or providers of acupuncture services (usually specially trained GPs) .

Other very important stakeholders for pregnant women or even more so after birth, are mother-child centres which, among other providers, offer birth preparation classes. They are usually part of the municipal or district authorities or are sometimes run by the church and provide general information (brochures, counselling) related to pregnancy or childcare as well as sometimes also offering services such as temporary baby-sitting, advice on breast-feeding, etc.

Birth preparation classes normally have to be paid for out-of pocket by the mother. Even though they are not part of the mother-child-pass examination programme and are not reimbursed, voluntary attendance is assumed to be very high. No data on participation rates were found in the course of this study. . In a survey conducted in 1999 among 3,000 women in Upper Austria, 51% of the responding women stated that they had attended a birth preparation course.¹⁰ Classes are usually attended by women between the 20th and the 30th week of pregnancy and are held by midwives, sometimes by physiotherapists and in rare occasions by other health professionals. Pregnant women are provided with information, are instructed on breathing and muscle relaxation techniques and methods to cope with pain.

Maternity benefits of social health insurance

Social health insurance funds provide benefits in cash and in kind for the insured and their dependants in the insured event of maternity, which begins about eight weeks before the scheduled delivery date or

¹⁰ Claudia Pass (2001). Utilisation of the mother-child pass. An example of the interaction between social status and health? Schriftenreihe Gesundheitswissenschaften volume 19. Linz 2001

in the case of early delivery with the delivery. If a woman is exempt from work due to the report of a public health officer, the insured event of maternity begins with the date of the report.¹¹ As defined in the General Social Insurance Act (*Allgemeines Sozialversicherungsgesetz, ASVG*), the insured event of maternity includes the pregnancy following the above mentioned starting point, delivery and any consequences thereof as long as these are not classified as insured events of illness or incapacity to work following illness.

Cash benefits (Maternity cash benefit¹²)

Insured women are entitled to a daily cash benefit/allowance during the last eight weeks before the expected birth, for the day of the delivery as well as the first eight weeks following the delivery. In special cases (preterm birth, multiple births or caesarean section) the period during which the daily allowance is granted is extended to 12 weeks. Another exception is made if the mother receives a report of a public health officer stating that her life or that of her baby was endangered if she continued to work or to take up work.

The height of the maternity cash benefit is based on the salary the mother received during a defined period before her maternity leave. 70% of the expenses for the maternity cash benefits are covered by means from the Family Burdens Equalisation Fund. Social health insurance is responsible for the administration of the maternity cash benefit and for covering 30% of the expenses. The benefit is also paid in the event of a still birth. In case of miscarriage it is provided until the day of miscarriage.

Benefits in kind

According to the General Social Insurance Act, maternity benefits in kind reimbursed by social health insurance involve any health care services provided to pregnant women by contract providers of social health insurance such as physicians, midwives, physiotherapists, etc. in the course of the insured event of maternity.

The scope and tariffs of these services are regulated in general contracts signed by the Hauptverband (Main Association of Austrian Social Insurance Institutions) and the professional representation of the service providers (Austrian Medical Association or Board of Midwives). Other services covered are medicines, medial auxiliaries and assistance by baby nurses or midwives.¹³ Social insurance also covers the cost of an inpatient stay for delivery (in a hospital or birth clinic) or the cost of a home birth. Reimbursement of an inpatient stay is limited to a length of stay of a maximum of ten days. Any stay beyond that (of the mother or the child) is not classified as maternity service but as health service (insured event of maternity vs. illness). Other services related to maternity care which are partially covered by social health insurance are services related to in-vitro fertilisation.

Special services for pregnant women

The regional sickness fund of Styria offers a smoking cessation programme targeted specifically at pregnant woman and their partners.¹⁴ In order to find out whether other health insurance funds undertake any activities in this field it would be necessary to conduct a survey among them.

1.6 Current challenges in connection with maternity care and delivery

The present section gives details on various challenges existing in connection with maternity care and delivery in Austria. Topics covered include infant mortality, maternal mortality, still births, miscarriage, malformation, termination of pregnancy, preterm birth and high risk pregnancies. Clinical guidelines for antenatal care are covered in section 1.7 and Annex 3.

¹¹ As defined in §157 of the General Social Insurance Act, the insured event of maternity includes the pregnancy, delivery and any consequences thereof as long as these are not classified as insured events of illness or incapacity to work following illness.

¹² Wochengeld

¹³ Assistance in connection with home births, outpatient-births and early discharge from hospital

¹⁴ Smoking cessation programme of the regional sickness fund of Styria, information leaflet, accessed at http://www.stgkk.at/portal/index.html;jsessionid=C8C62B84F03B07B94C9DCF82E15197BE?ctrl:cmd=render&ctrl>window=stgkkportal.channel_content.cmsWindow&p_menuid=67559&p_tabid=3 on 30 November 2008

In the course of the study a small sample of health professionals were questioned about the main challenges related to pregnancy and birth in Austria (4 gynaecologists, 1 neonatologist, 6 midwives). The following potential challenges were listed whereby health professionals were asked to rank these according to their importance: infant mortality, preterm birth, miscarriage, termination of pregnancy, illnesses of the mother (diabetes, pre-eclampsia, HELLP, high blood pressure, infections, etc.) and other risk factors (age of the mother, unhealthy lifestyle: smoking, alcohol, poor nutrition, lack of exercise).

The gynaecologists surveyed seemed to agree that preterm birth was the major challenge nowadays. The majority also considered illnesses of the mother as being very important. Opinions on miscarriage varied. Infant mortality appears to be perceived in a heterogeneous way as it never received the same ranking twice. Other risk factors are ranked 3rd twice and 5th twice. The majority of the responding midwives believe that illnesses of the mother represent the major challenge for pregnancy and birth (about 57%). Infant mortality and termination of pregnancy are the two challenges receiving the lowest ranking. The opinion of midwives regarding preterm birth is heterogeneous however always afflicted with a high priority (ranked 1-3). Other risk factors are placed somewhere in between. It was interesting to see that the perception of gynaecologists and midwives was quite different even though both groups of health professionals stated preterm birth and illnesses of the mother as the primary challenges in connection with pregnancy and birth. The neonatologist equally lists these two challenges first. In general, termination of pregnancy does not seem to be of that high importance, considering that gynaecologist and midwives ranked it last.

1.6.1. *Infant mortality*

In Austria, infant mortality is defined as the number of deaths of infants aged one year or younger per 1000 live births. Perinatal mortality is defined as the number of deaths of infants in the first week following birth per 1000 live births. Austria is one of two countries linking birth and death certificates to get more accurate data on infant mortality.¹⁵

From the 1970s to 2006, infant mortality in Austria dropped by more than 85%, from about 25.9 deaths per 1000 live births to less than 4 deaths per 1000 live births.¹⁶ Austria's infant mortality rate is situated below the EU average which is 4.8 deaths per 1000 live births.¹⁷ Most of the reduction is due to the decline in perinatal deaths¹⁸ which dropped from 14.07 deaths per 1000 births in 1980 to 3.2 in 2006 (the EU average in 2006 being 6.05).¹⁹ This was motivated by technological improvements, improved access to pre- and postnatal care for pregnant women as well as better nutrition. The reduction in perinatal and infant mortality can partially be attributed to the introduction of the mother-child-pass examination programme in the early 1970s.²⁰ In the past, especially between 1997 and 2004, infant mortality has remained relatively stable²¹, suggesting that a further decrease cannot be attained solely by medical measures, but only through a reduction of the prevalence of risk factors such as alcohol consumption, overweight and smoking.²² Moderate decreases have taken place since 2005.

¹⁵ European Perinatal Health Report. 2008. EURO-PERISTAT project in collaboration with SCPE, EUROCAT & EURONEOSTAT. Based on data from 2004. Published in 2008. Available at www.europeristat.com

¹⁶ OECD Health Data, Accessed 16 October 2008

¹⁷ European health for all database (HFA-DB). Updated July 2008, accessed at <http://data.euro.who.int/hfad/online> 16 October 2008

¹⁸ Waldhör, T., Vutuc, C., Haidinger, G., Mittlböck, M., Kirchner, L., Wald, M. (2005). 'Trends in infant mortality in Austria between 1984 and 2002.' *Wiener klinische Wochenschrift* 117 (15-16), pp.548-553

¹⁹ European health for all database (HFA-DB). Updated July 2008, accessed at <http://data.euro.who.int/hfad/online> 16 October 2008

²⁰ Waldhoer, T., Vutuc, C. (1995). 'Trendanalyse der Säuglingssterblichkeit unter besonderer Berücksichtigung der perinatalen Mortalität in Österreich.' *Gesundheitswesen* 57 (1), pp. 1-54 in Waldhoer, T., Haidinger, G., Wald, M., Heinzl, H. (2006). 'Non-random geographical distribution of infant mortality in Austria 1984-2002.' *Wiener Klinische Wochenschrift* 118/11-12, pp. 341-347, p. 342

²¹ Waldhoer, T., Haidinger, G., Wald, M., Heinzl, H. (2006). 'Non-random geographical distribution of infant mortality in Austria 1984-2002.' *Wiener Klinische Wochenschrift* 118/11-12, pp. 341-347

²² Mossialos, E., Allin, S., Ladurner, J. et al. (2006). Framework Performance Assessment. Report for the Main Association of Austrian Social Insurance Institutions. Vienna: Main Association of Austrian Social Insurance Institutions.

Table 2: Infant mortality, per 1000 live births

	1970	1980	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008
Infant mortality	25.89	14.34	7.84	5.42	4.83	4.84	4.06	4.46	4.47	4.18	3.61	3.7*	3.7*

Source: European health for all database, accessed 16 October 2008

*Statistik Austria, Demographic indicators, last changed January 2010

Table 3: Perinatal mortality, per 1000 live births

	1970	1980	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008
Perinatal mortality	27.0	14.2	6.9	6.9	6.7	6.2	6.4	6.4	6.1	5.9	6.0	5.9*	5.4*

Source: European health for all database, accessed 16 October 2008

*Statistik Austria, Demographic indicators, last changed January 2010

Table 4: Infant mortality 1951 to 2008 by age, per 100,000 live births

	1951	1961	1971	1981	1991	2001	2007	2008
Total	61.3	32.7	26.1	12.7	7.5	4.8	3.7	3.7
Below 7 days	26.7	18.9	16.4	6.5	3.1	2.6	2.1	2.0
7 – 27 days		2.9	2.6	1.7	1.2	0.8	0.5	0.6
28 days to less than 1 year		10.9	7.1	4.4	3.1	1.5	1.2	1.0
Below 28 days		21.8	19.0	8.2	4.4	3.3	2.5	2.7

Source: Statistik Austria, Statistical Yearbook 2009, Chapter 2 Population, table 2.43

Statistik Austria distinguishes different causes of death when documenting infant mortality in Austria: infectious diseases, illnesses affecting the respiratory system, illnesses affecting the digestive system, multiple birth, not close specified underdevelopment, congenital abnormalities, sudden infant death, birth injuries and other perinatal causes of death, forcible causes of death and all other causes of death.

Whilst, in 1980, most infants died due to congenital abnormalities (25%), other causes of perinatal death (21.5%) and birth injuries (17.1%), major causes of infant death in 2007 were not closer specified underdevelopments (33.5%), congenital abnormalities (24.5%) and other perinatal causes of death (21%). Deaths due to respiratory diseases and diseases of the digestive system as well as deaths in combination with multiple births and following birth injuries have continuously dropped over the past decades. Deaths due to not closer specified underdevelopment have increased sharply in the mid Nineties (accounting for up to 50% of overall infant mortality in the beginning and mid of the 21st century) and finally dropped again to about a third in 2007.

In their research paper of 2006, Waldhoer et al. studied the regional differences of infant mortality in Austria between 1984 and 2002. They adjusted mortality rates for various variables influencing survival rate during the first year of life and found out that birth weight, gestational age, infant’s body length at birth and also the year of birth had an influence of an infant’s probability to survive. The authors also showed that infants born in the greater area of Styria had, even after adjusting for the before mentioned variables, a significantly higher probability of survival. Spatial patterns of infant mortality could however not be explained by the risk factors in the authors’ regression model. They suggested undertaking further research with variables other than those given in the birth certificates.²³

²³ Waldhoer, T., Haidinger, G., Wald, M., Heinzl, H. (2006). 'Non-random geographical distribution of infant mortality in Austria 1984-2002.' Wiener Klinische Wochenschrift 118/11-12, pp. 341-347

In their follow-up publication of 2008, Waldhoer et al. analysed the special distribution of infant mortality in Austria between 1984 and 2006 and found out that spatial distribution of infant mortality rates within the first year of life varies when grouped by cause of death. The South-eastern region of Austria shows a clearly decreased risk of infant mortality during the first year of life. Peripartur problems seem to occur less often in the West of Austria. Sudden infant death (SID) shows a lower risk in the North of Austria; its geographical distribution is nearly inversely related to the other causes of death, potentially implying that SID occurs in connection with different circumstances than the other causes of death.

More statistics on the regional distribution of infant mortality can be found in Annex 2.

*1.6.2 Maternal mortality*²⁴

Maternal mortality can be classified as

- direct maternal mortality which results from obstetric complications during pregnancy, birth or child-bed (within 42 days after termination of the pregnancy)
- indirect mortality as a consequence of a pre-existing illness which is adversely affected or aggravated by pregnancy (e.g. diabetes, cardio-vascular disease or epilepsy)
- not being related to pregnancy but to an incident which would have resulted in the woman's death even without being pregnant such as an accident, homicide or suicide.

Since 2002 also late maternal deaths (later than 42 days but within one year following delivery) are recorded in Austria. In addition to recording only cases of maternal mortality, the authors (Beck, Vutuc) suggest to look at cases involving near-disasters which result in the woman requiring intensive care.

In 1946 327.9, in 1956 121.7, in 1975 23.5 and in 2006 3.8 cases of maternal death per 100,000 live births occurred. In 2006 three women died compared to 77,914 live births, constituting one case in 26,000 live births or 4.2 per 100,000 live births (all direct mortality). Over the past years (2000-2006) cases of maternal mortality have varied between three and eight cases per year, direct maternal mortality deviating between one and six cases. Reasons given for direct maternal mortality (56.1% of 41 cases of maternal mortality between 2000 and 2006) are genital bleeding, sepsis, thromboembolism, hypertension and ectopical pregnancy. Analysis of individual cases is used to detect reasons of maternal deaths.

1.6.3 Still births

The definition of stillbirth and miscarriage was changed in accordance with WHO guidelines on 1 January 1995. Since then the Midwives Act (*Hebammengesetz*) defines a birth as a stillbirth if the birth weight is below 500 grams and no signs applicable to life births (lung function, heart beat, pulsating of umbilical cord) are observed. Still births are not certified and therefore not statistically recorded. Due to this change in definition the number of stillbirths is more than a third higher than it was according to the previous definition (body length of 35 cm, corresponding with an average birth weight of 1,000 grams). The different definitions have to be considered when comparing data from before 1995 and afterwards.²⁵

²⁴ Beck, A., Vutuc, C. (2006). Development of maternal mortality in Austria. Presentation. Accessed at http://www.perinatal.at/pdf/0706_Entwicklung_der_muetterlichen_Mortalitaet_in_Oesterreich.ppt on 28 November 2008

Beck, A., Vutuc, C. (2008). 'Maternal mortality in Austria.' *Gyn Aktiv* 03/08, online version, accessed at http://www.medmedia.at/medien/gyn-aktiv/artikel/2008/07/5348_03-08_Muettersterblichkeit_in_Oesterreich.php on 28 November 2008

²⁵ Statistik Austria, Statistical Yearbook 2008, Statistik Austria (2007). Yearbook of Health Statistics 2006. Vienna.2007

Table 5: Stillbirths, 1951-2008

Year	1951	1961	1971	1981	1991	2001	2007	2008
Total	2,145	1,757	1,056	511	321	278	291	258
Per 100,000 live births	20.9	13.4	9.7	5.4	3.4	3.7	3.8	3.3

Source: Statistik Austria, Statistical Yearbook 2009, Chapter 2 Population, table 2.43

1.6.4 Miscarriage

The definition of stillbirth and miscarriage was changed in accordance with WHO guidelines on 1 January 1995. Since then the Midwives Act (*Hebammengesetz*) defines a birth as a miscarriage or stillbirth if the birth weight is below 500 grams and no signs applicable to life births (lung function, heart beat, pulsating of umbilical cord) are observed. The different definitions have to be considered when comparing data from before 1995 and afterwards.²⁶

Risk factors for miscarriage are the age of the woman, the number of previous pregnancies, prior miscarriage, smoking, alcohol, temperature, trauma and caffeine intake, moreover certain infections, medication, radiation or environmental factors.²⁷

Maternal mortality due to miscarriage (ICD-9, pos. no. 630-639) has dropped considerably between 1950 and 2000. Whilst 59 cases were recorded in 1950 only half the amount of cases was documented in 1960 and about a 20th (3) in 1970. From 1990 onwards one or no case was recorded.²⁸

For the present study a small group of Austrian health professionals were asked about the steps they take in case of threatened miscarriage. The following table summarises their replies.

Table 6: Individual approaches of health service providers in case of threatened miscarriage

Gynaecologists	<ul style="list-style-type: none"> - Clarification of psychosocial risks such as for instance family setting, worries, financial problems or work-related problems. Attempting to find solutions. - Infection screening and if required treatment with antibiotics - Physical rest - More frequent check-ups - Admission to hospital - Information of parents - Depending on gestation age: tocolysis, promotion of lung maturity (cortisone)
Midwives	<ul style="list-style-type: none"> - Assessment of maternal risk factors and psychological stress for development of suitable therapy - Increased screening and observation - Referral to medical specialist, co-operation with specialist - Physical rest - Referral to hospital - Potential hormone substitution - Psychological counselling of patient

Source: Consultation of selected Austrian health professionals, October/November 2008

²⁶ Ibid

²⁷ Website of Hefler, L. (Gynaecologist in Vienna). Miscarriage. Accessed at <http://www.fehlgeburt.at/fehlgeburt.html> on 16 November 2008

²⁸ Statistik Austria, Statistical Yearbook 2008, Statistik Austria (2007). Yearbook of Health Statistics 2006. Vienna.2007

1.6.5 Malformation

Identifiable malformations at birth are classified according to the ICD classification (chapter XIV-congenital anomalies, before 2002: ICD 9, after that ICD 10). The most frequent malformations were congenital malformations, deformations of the muscular-skeletal system as well as cleft palates and chromosome abnormalities. In 2006 about a fifth of infant mortality was connected to congenital malformations.

Table 7: Malformations, 2000-2008

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008
Total malformations identified at birth	425	327	302	262	317	318	290	251	310
Per 100,000 live births	543,0	433,4	385,2	340,5	401,4	406,7	372,2	329.2	398.7
Total live births with malformations	378	313	275	252	302	300	269	235	293
Per 100,000 live births	483.0	414.8	350.8	327.5	382.4	383.7	345.3	308.2	376.8

Source: Statistik Austria (2009) Yearbook of health statistics 2008

Regional variations among the absolute number of malformations identifiable at birth (of all live births) are considerable. Upper Austria and Lower Austria showed the highest absolute numbers in 2008. Malformations identifiable at birth per 100,000 live births occurred most often in Vorarlberg in 2008 (659.5) and Upper Austria (531.8) and least often in Burgenland (225.7) and Vienna (270.5). Between 1998 and 2008 the number of live births with identifiable malformations per 100,000 live births was highest in Upper Austria and Carinthia. In Austria the number of births with identifiable malformations has decreased from 483.0 in 2000 to 376.8 in 2008.²⁹

1.6.6 Termination of pregnancy³⁰

In Austria termination of pregnancy is regulated by granting women the unconditional right to have an abortion within the first three months of pregnancy if the abortion is undertaken by a physician and preceded by a consultation. Abortion within the first three months of pregnancy does not require a medical indication in order to be undertaken by legal means, after three months it does. Equally there are no restrictions with regard to a certain waiting period between the consultation and the actual intervention. Procedural norms do not exist, neither do regulations on reimbursement. Usually the woman has to pay for the intervention privately. This leads to only few hospitals or physicians publicly announcing that they undertake abortions. The majority of the health providers are located in urban areas. Prices charged vary considerably.

The morning-after pill (emergency contraception) was authorized in Austria in 2000 but is generally available as prescription-only medication. Some pharmacies, referring to gap in legislation, which states that certain prescription-only medication can also be dispensed without a prescription in case of exigent circumstances³¹, provide it without a prescription.³²

In a presentation given in 2001 Christian Fiala, a gynaecologist from Vienna, reported that no reliable data on the number of abortions exist for Austria. This is because abortions do not have to be registered or reported. Only inpatient stays related to abortions are documented, documentation of those undertaken in physician practices or outpatient clinics is not available on a regional or national level. Social health insurance funds do not reimburse abortions and do therefore not have any billing data on

²⁹ Statistik Austria (2009) Yearbook of health statistics 2008. Vienna.

³⁰ Information on and experience with termination of pregnancy (abortion): medicamentous method and surgical method, accessed at www.abtreibung.at on 19 October 2008
Enquete “General conditions and experienced data on the termination of pregnancy from a European perspective. 26 November 2001 Vienna. Various lectures.

³¹ § 4 para. 5 of the Prescription Status Act (*Rezeptpflichtgesetz*)

³² Buchacher, R. (2009). Under the blanket. Article in the journal *Profil*, Nr. 40, 28 September 2009, pp. 80-88

this subject. In 1985 Ketting and Praag calculated that the bottom limit of abortions per year in Austria was situated at about 46,000-67,000. In 1999 Tatz-Preve and Kytir conclude that, by extrapolating data from other European countries (10 to 29 abortions per 1,000 live births), the number of abortions conducted in Austria per year amounted to 19,000-25,000.³³ The actual number of interventions is supposed to be significantly higher than the number stated by Ketting and Praag. Austria is, together with Luxembourg and Portugal, one of the few countries in Europe not regularly reporting on the number of abortions conducted.³⁴ In a recent publication in an Austrian news journal the number of abortions performed in Austria is estimated to be situated between 30,000 and 40,000 per year. Based on the author, this corresponds to 17 to 23 yearly abortions among women of child-bearing age, making Austria one of the countries with the highest number of abortions in Europe. Separately he quotes two references with estimates of 20-25 legal abortions and 24 teenager abortions being performed in Austria per women of child-bearing age per year.³⁵

The European Perinatal Health Report provides data on the rate of terminations of pregnancy for fetal anomaly following prenatal diagnosis (TOPFA) in Austria.³⁶

Table 8: Rate of terminations of pregnancy for fetal anomaly following prenatal diagnosis

TOPFA < 20 weeks per 1000 births	TOPFA 20+ weeks per 1000 births	Total TOPFA per 1000 births
2.66	0.67	3.33

Source: European Perinatal Health Report 2008

1.6.7 Preterm birth

Preterm birth is defined by early delivery taking place between the 24th and the 37th week of pregnancy. Birth weight is situated between 500 and 2,500 grams.³⁷ Preterm births are afflicted with an especially high risk if they occur prior to the 32nd week of pregnancy.³⁸

Table 9: Preterm births in Austria, 2008 by regions (Länder)

	Austria	B	C	LA	UA	S	ST	T	VO	VI
Preterm births	5,495	133	353	956	917	330	788	473	296	1,216
Live births	77,752	2,215	4,718	14,085	13,540	5,070	10,255	6,703	3,791	16,885
Preterm births/ Live births (in %)	7.07	6.00	7.48	6.79	6.77	6.51	7.68	7.06	7.81	7.20

Source: Statistik Austria, Demographic Yearbook 2008

Definition of preterm births according to WHO=birth weight below 2,500grams

B=Burgenland, C=Carinthia, LA=Lower Austria, UA=Upper Austria, S=Salzburg, ST=Styria, T=Tyrol, VO=Vorarlberg, VI=Vienna. **Highest, second highest, third highest**

³³ Tazi-Preve, I.M., Roloff, J. (2001). Termination of pregnancy in Europe. Influencing factors and behaviour of women in case of an unwanted pregnancy. In: Institute for Demography/ÖAW (Publisher) Demographic Information. Vienna. 2001, p. 39-58 in BMGFJ (2005). Austrian Women's Health Report. Vienna. 2005, page 162

³⁴ BMGFJ (2005). Austrian Women's Health Report. Vienna. 2005

³⁵ Buchacher, R. (2009). Under the blanket. Article in the journal Profil, Nr. 40, 28 September 2009, pp. 80-88 Reference quoted for legal abortions: National statistics/Eurostat, Alan Guttmacher Institute 2007/2008.

Reference quoted for teenager abortions: A.M. Rey, co-president of the Swiss Association for Decriminalisation of the termination of pregnancy before its dissolution in 2003.

³⁶ European Perinatal Health Report. 2008. EURO-PERISTAT project in collaboration with SCPE, EUROCAT & EURONEOSTAT. Based on data from 2004. Published in 2008. Available at www.europeristat.com

³⁶ OECD Health Data, Accessed 16 October 2008

³⁷ <http://www.schwanger-in-bayern.de/schwangerenberatung/themen/schwangerschaft-geburt/fruehgeburten.html>, accessed 12 November 2008

³⁸ Many preterm births could be prevented. Accessed at <http://science.orf.at/science/news/140800> on 11 November 2008

Based on the data from Statistik Austria, about 6-8% of all live births have a birth weight of below 2,500 grams. Even though the absolute number of preterm births has decreased over the past years, the share of preterm births of the total number of births has increased from 5% to 7%. In particular the number of infants with a birth weight below 1,000g has doubled between 1990 and 2003 (2.5% to 5%).³⁹ Preterm birth remains a major challenge in Austria. Notwithstanding mother-child-pass examinations and the installation of specialised prenatal centres, cases of preterm birth have increased.⁴⁰ This is often related to vaginal infections which can induce early contractions or breaking of water. 21% of all pregnant women present with bacterial vaginal infections or fungal infections. Other reasons for premature pregnancies stated most frequently are infections of the mother, in-vitro pregnancies, and nicotine and alcohol consumption during pregnancy.

According to expert opinion preterm births could be reduced by 50% if a screening for vaginal infections was undertaken during pregnancy and identified infections were treated in time. Equally the rate of late miscarriages could be halved.

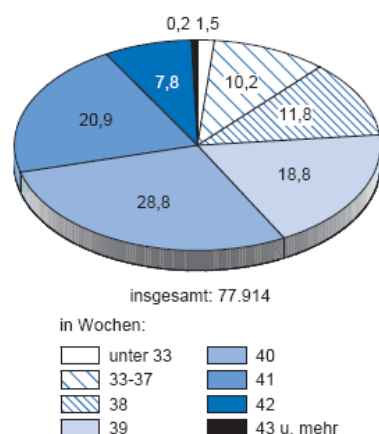
For the present study a small group of Austrian health professionals were asked about the steps they take in case of threatened preterm birth. The subsequent table summarises their replies.

Table 10: Individual approaches of health service providers in case of threatened preterm birth

Gynaecologists	<ul style="list-style-type: none"> - Admission to hospital - Infection screening, blood test, test for c-reactive protein, if required admission of antibiotics - Early maternity leave, sick leave - Assessment of psychosocial environment - Absolute physical rest - Tocolysis, Admission of cortisone - Information of parents
Midwives	<ul style="list-style-type: none"> - Assessment of maternal risk factors and psychological stress for development of suitable therapy - Referral to hospital - Information of physician, information of paediatrician - Depending on gestational week: preparation for caesarean or vaginal birth - Psychological counselling - Before 24th week: Increased monitoring, after 24th week active measures such as: lung maturity, tocolysis, antibiotics

Source: Consultation of selected Austrian health professionals, October/November 2008

Figure 1: Live births categorised according to the duration of pregnancy (in weeks), in percent



Source: Yearbook of Health Statistics 2006

Translation: Ingesamt=Total, in Wochen=in weeks, unter 33=below 33, 43 u. mehr=43 and over

³⁹ Egger, A. (2005). 'Preterm birth: Better screening required.' *Clinicum* 10/2005, Online version, accessed at <http://www.medical-tribune.at/dynasite.cfm?dssid=4171&dsmid=69699&dspaid=537540> on 16 November 2008

⁴⁰ Fenz, C. (2007). Mother-child-pass: Current strategies (*Mutter-Kind-Pass: Aktuelle Strategien*). *Clinicum* 7-8, accessed at <http://www.uro.at/dynasite.cfm?dssid=4171&dsmid=81858&dspaid=641113> on 14 November 2008

1.6.8 High risk pregnancies and other challenges related to maternity care and delivery

According to the WHO guideline report on “Managing complications in pregnancy and childbirth” which was published in 2003, “all pregnancies are at risk... about 15% of all pregnant women develop a potentially life-threatening complication that calls for skilled care and some will require a major obstetrical intervention to survive.”⁴¹

The Austrian mother-child pass lists a range of potential complications during pregnancy which include: bleeding prior to the 28th week of pregnancy, bleeding after the 28th week of pregnancy, placenta previa, polyhydramnion, oligohydramnion, placenta insufficiency, preliminary contractions, cervix insufficiency, anaemia, infection of the urinary tract, indirect Coombstest positive (Rh), risk originating from one of the other serological tests, hypertension (Y 140/90 mmHg), proteinuria (> 1g/l), medium-severe oedemas, and gestational diabetes.

In general, an increasing number of pregnancies in Austria are defined as high risk pregnancies. Technical equipment and medicines have become an inherent part of diagnosis and treatment during pregnancy in the recent past. It is assumed that, due to the rising number of diagnostic opportunities available during pregnancy, more examinations and tests are conducted. Data on prenatal diagnostic examinations were not available for Austria in 2005.⁴² Most examinations are executed in hospitals or in special centres for prenatal diagnostics, fewer are conducted by physicians, usually gynaecologists in their private practices.

Reasons for the increase in diagnostics may be based in increased supply, forensic reasons and naturally also medical reasons. Some women undertake more examinations than listed in the mother-child-pass. It is important to look at trends in prenatal diagnostics and question the motivation behind them. Issues which should be considered in connection with this topic are adequate training of physicians, counselling of patients (on potential consequences, outcome and side effects) and medical necessity of the examinations because prenatal diagnostics do not only result in potentially improved identification of actual risk pregnancies but may also create uncertainty and fear among pregnant women.

Pregnancies which are defined as high risk pregnancies may require special tests, monitoring and treatment. The procedure chosen depends on the type of risk factor. Frequently additional prenatal diagnostic tests are ordered by the attending gynaecologist to enable a more precise definition of the degree of risk and to take the appropriate action. Prenatal tests are invasive or non-invasive and usually performed either in a hospital or a specialised centre for prenatal diagnostics.

Potential indications of preterm birth

There are several potential indications of preterm birth including: infections, gestational diabetes, streptococci, toxoplasmosis or increasing age of pregnant women.

Bacterial vaginal infections: These frequently trigger preterm births because they can result in infections of the fetus, premature contractions and breaking of water. The inclusion of screening for infections in the mother-child-pass examination programme is being discussed but, according to a representative of the Federal Ministry of Health still requires further evidence before its potential implementation.⁴³

Gestational diabetes: According to the chair of the Austrian mother-child-pass committee approximately every 15th woman suffers from gestational diabetes. The chair states that in 50 to 80% of the cases gestational diabetes can lead to disturbed glucose intolerance or diabetes mellitus appearing five to ten years following birth. Gestational diabetes can also have severe consequences for the fetus such as hyperinsulinisation, hypoglycaemia, polycythaemia or jaundice. Risk factors for gestational diabetes are well known and apply to about 90% of pregnant women. This is why the expert suggests

⁴¹ SHR Department of Reproductive Health and Research Family and Community Health, World Health Organization (2003). *Managing Complications in Pregnancy and Childbirth: A guide for midwives and doctors*. Geneva. 2003. Accessed at <http://www.who.int/reproductive-health/impac/index.html> on 15 November 2008

⁴² BMGFJ (2005). *Austrian Women's Health Report*. Vienna. 2005

⁴³ Rux, S. (2007). 'Current strategies in antenatal care.' *Ärzte Woche* 21/44, accessed at <http://www.aerztewoche.at/viewArticleDetails.do;jsessionid=D40382EDFD3236EE0FB4DBEBC57FE846?articleId=6652> on 14 November 2008

the screening of all pregnant women. The Austrian mother-child-pass committee demanded the inclusion of the oGTT (oral glucose tolerance test) between the 24th and the 28th week of pregnancy into the mother-child-pass examination programme.⁴⁴ In the 2008 edition of the mother-child pass, the test was included as an optional (facultative) laboratory test to be undertaken between the 25th and 28th week of pregnancy. The intention behind this was, based on the statement of a representative of the Federal Ministry of Health⁴⁵ not to include the examinations in the mother-child-pass examination programme, which would also imply that they would have to be negotiated with social insurance (to consider them in the reimbursement catalogue and the share of the FLAF paid to social insurance), but to give physicians the possibility to document the execution of the test in case they performed it. Documentation for this test was subsequently modified in the 2009 edition of the mother-child pass (published in autumn 2009) in such a way that testing for oGTT could only be undertaken based on a medical indication.⁴⁶ As a consequence of the amendment of the Mother-Child-Pass Directive in 2009, the oGTT should now be performed as part of the examination taking place between 25th and 28th week of pregnancy as of 1 January 2010 and forms a pre-requisite for mothers to continue receiving the full child-benefit.

Streptococcus: Streptococcus which is present in the anogenital area of the mother during birth can be responsible for dangerous infections of the child following birth.⁴⁷ Early infection within 20 hours can lead to a generalising sepsis. A general screening on streptococcus is recommended for the 35th to 37th week of pregnancy. Screening for β -haemolytic streptococci was included as an optional laboratory test to be undertaken between the 25th and 28th week of pregnancy in the 2008 version of the mother-child pass. The intention behind this was to give physicians the possibility to document the execution of the test in case they performed it. In 2009 it was not intended to generally include screening for streptococci in the mother-child-pass examination programme.⁴⁸ Documentation for this test was initially modified in the 2009 edition of the mother-child pass (published in autumn 2009) in such a way that testing for B streptococcus could only be undertaken based on a medical indication. With the 2009 amendment of the Mother-Child-Pass Directive (valid from January 2010) screening for β -haemolytic streptococci was excluded from the mother-child-pass examination programme.

Toxoplasmosis: The effectiveness of toxoplasmosis screening during pregnancy is questioned by experts.⁴⁹ About 2-3 in 1000 women are infected with the toxoplasmosis gondii parasites during pregnancy. In case the infection is not treated the fetus is subject to a 50% infection risk which can lead to severe damage of the brain or eyes. Currently women in Austria are screened for toxoplasmosis before the 16th week of pregnancy as part of the laboratory examination of the mother-child-pass examination programme. If required, additional check-ups must be performed and documented in the mother-child pass. Due to screening the incidence of fetal infections could be reduced. However tests are often not performed effectively, too frequently or too rarely.

Increasing age of pregnant women: Results of the survey undertaken among 3,000 women receiving maternity benefits in Upper Austria in 1999 indicated that women with a higher income were more likely to have children at an advanced age and had a higher probability of experiencing a high risk pregnancy. Women working in executive positions presented the highest share of risky pregnancies, while women working in skilled labour presented the lowest share of risky pregnancies. The share was lower for manual labourers than that for employed or self-employed women. Women from households with a low income had the lowest and women from a household with a high income the highest share of risky pregnancies.

⁴⁴ Rux, S. (2007). 'Current strategies in antenatal care.' *Ärzte Woche* 21/44, accessed at <http://www.aerztewoche.at/viewArticleDetails.do;jsessionid=D40382EDFD3236EE0FB4DBEBC57FE846?articleId=6652> on 14 November 2008

⁴⁵ Email correspondence 15 May 2009

⁴⁶ thereby making it an insured event of “illness” which is not within the scope of prevention/screening (the mother-child-pass examination programme, but is to be dealt with by social health insurance.

⁴⁷ Fenz, C. (2007). 'Mother-child-pass: Current strategies.' *Clinicum* 7-8, accessed at <http://www.uro.at/dynasite.cfm?dssid=4171&dsmid=81858&dspaid=641113> on 14 November 2008

⁴⁸ Statement of a representative of the Federal Ministry of Health, 15 May 2009 (Email correspondence)

⁴⁹ Fenz, C. (2007). 'Mother-child-pass: Current strategies.' *Clinicum* 7-8, accessed at <http://www.uro.at/dynasite.cfm?dssid=4171&dsmid=81858&dspaid=641113> on 14 November 2008

1.7 Clinical guidelines for antenatal care

Clinical guidelines or recommendations on subjects related to antenatal care respectively care provided during pregnancy have been developed by medical societies, hospital departments and other Austrian institutions listed below. Health professionals in Austria also draw on international guidelines, often on guidelines developed in Germany:

- Austrian Society of Pre- and Perinatal Medicine (*Österreichische Gesellschaft für Prä- und Perinatale Medizin*)
- Austrian Society of Gynaecology and Obstetrics (*Österreichische Gesellschaft für Gynäkologie und Geburtshilfe, ÖGGG*)
- Austrian Society for Ultrasound in Medicine (*Österreichische Gesellschaft für Ultraschall in der Medizin, ÖGUM*)
- Austrian Diabetes Association (*Österreichische Diabetes Gesellschaft, ÖDG*)
- European Society for Infectious Diseases in Obstetrics and Gynaecology, Austrian Commission⁵⁰
- Austrian AIDS Society (*Österreichische AIDS Gesellschaft*)⁵¹
- International Commission on Radiological Protection (*Internationale Strahlenschutzkommission, ICRP*)⁵²
- Department of Obstetrics and Fetomaternal Medicine at the University Clinic of Gynaecology in Vienna (*Abteilung für Geburtshilfe und fetomaternale Medizin der Universitätsklinik für Frauenheilkunde Wien*)
- Austrian Agency for Health and Food Safety (*Österreichische Agentur für Gesundheit und Ernährungssicherheit, AGES*): information brochure for pregnant women on food infections of the Austrian Agency for Health and Food Safety (AGES) published together with the Austrian Medical Association⁵³
- Association of Austrian Dietologists (*Verband der Diätologen Österreichs*)⁵⁴
- Austrian Nutrition Society (*Österreichische Gesellschaft für Ernährung, ÖGE*)⁵⁵
- Magistrate of the city of Vienna: co-operation of various departments during the campaign “dieSie” – as part of the Woman’s Health Programme of the city of Vienna⁵⁶

A complete list of guidelines can be found in Annex 3.

⁵⁰ Selection of ESIDOG-Guidelines: vaginal infections/genital virus infections/systemic virus infections during pregnancy, accessed at

http://www.oeggg.at/fileadmin/user_upload/downloads/Leitlinien/Leitlinien_ESIDOG_Auswahl.pdf and Website of the European Society for Infectious Diseases in Obstetrics and Gynaecology, Österreichische Kommission, accessed at <http://www.univie.ac.at/esidog/> (restricted access, for members only) on 28 November 2008

⁵¹ Austrian AIDS Society, Guidelines for diagnosis and therapy of the HIV infection. Accessed at <http://www.aidsgesellschaft.at/site-content/hiv-therapie/leitlinien> on 28 November 2008

⁵² Radiological Protection and Pregnancy: Legal aspects of medical and work-related exposure of pregnant women. Presentation by Manfred Ditto (BMGFJ). 20 October 2007, held at the yearly VMSÖ (*Verband für medizinischen Strahlenschutz Österreich* (Association for medical radiological protection Austria) conference in Salzburg, accessed at http://www.strahlenschutz.org/kongresse/downloads/2007/2007_salzburg_ditto_Schwangerschaft.pdf on 28 November 2008

⁵³ Austrian Agency for Health and Food Safety, accessed at http://www.ages.at/uploads/media/folder_schwangere_web.pdf on 7 January 2009

⁵⁴ Association of Austrian Dietologists (*Verband der Diätologen Österreichs*) accessed at <http://www.diaetologen.at/de/portal/ernaehrung/gesundeernaehrung/schwangerschaftundstillzeit/diernaehrunginderschwangerschaft/> and <http://diaetologen.connexcc-hosting.net/de/portal/ernaehrung/gesundeernaehrung/schwangerschaftundstillzeit/wasdemungeborenenenschadenkann/> on 7 January 2009

⁵⁵ Austrian Nutrition Society (*Österreichische Gesellschaft für Ernährung, ÖGE*), accessed at <http://www.univie.ac.at/oege/php/current/content.php?l=de&a=2337> on 7 January 2009

⁵⁶ Guideline for the psycho-social treatment of pregnant women, accessed at http://www.diesie.at/export/sites/fsw/diesie/downloads/broschueren/2008_03_PPD-Guidelines_druck.pdf on 28 November 2008

1.8. Advice given to pregnant women in Austria

Advice given to pregnant women in Austria is only partially standardised. It is provided either in written form (booklets, brochures, information leaflets, internet, etc.) or orally (by health service providers, health authorities, etc.). Due to the great variety of actors (national, regional, local level of the health system; medical vs. non-medical) it is very difficult to obtain an overview of the current status quo. If a woman wants to be well informed, the degree of information will also depend on her own initiative.

Standardised information

The main source of written information for pregnant women is the small booklet “My baby is coming” which they receive together with the mother-child pass. The booklet is published by the Ministry of Health and updated regularly. It comprises close to 150 pages and covers a wide range of topics related to pregnancy, birth, the baby, as well as legal and information issues, which are listed in the following paragraphs. Further information i.e. specific recommendations can be found in Annex 4.

Pregnancy: Physical changes, duration, nutrition, drinking, infections, vaccinations, personal hygiene, drugs, smoking, travelling by car, sexuality, exercise, dental care, conservation of blood of the umbilical cord, fetal movements, birth-preparation-gymnastics, screening, potential complications (discharge, high blood pressure/HELLP syndrome, hair and skin changes, haemorrhoids, varicose veins, back pain, stretch marks, pyrosis, constipation, nausea and vomiting, high-risk pregnancies (bleeding, contractions, amniorrhesis), anonymous birth, baby-flap, domestic violence.

Birth: Preparations, timing (when will it happen?), procedure (what happens at birth: phases), breastfeeding, post-partal gymnastics, depression, contraception following birth.

The baby: sleeping, monitoring the baby’s behaviour to detect abnormalities, infections and temperature, teeth, vomiting, dermatological care, feet, digestion, vaccinations, prevention of SID (sudden infant death), nutrition (breastfeeding, supplementary food, allergies), safety (falls, burns, electricity, intoxications, drowning, car-accidents), development diagnostics/early promotion, education/training for parents, counselling offices.

Legal aspects: mother-child pass (issuing offices, aims, (work-related) maternal protection (maternity leave)), prohibition to employ, maternity benefit, maternity leave, child care benefit, part-time employment, dismissals protection.

Contact points/Brochures: Women’s health centres and information centres, vaccinations, counselling on smoking, offices of the regional governments, offices for domestic violence, information on breastfeeding, illness, child-care, employment and brochures.

The Austrian Women’s Health Report of 2005 contains a considerable amount of information on pregnancy and birth also including information on the consumption of alcohol or smoking during pregnancy and describing potential consequences thereof. The authors state that public awareness of the potential dangers of consuming even small amounts of alcohol does not exist and that absolute renouncement of alcohol consumption during pregnancy should be promoted. No conclusive data on smoking pregnant women exists; however, about 20% are estimated to smoke.⁵⁷

Partially standardised information

Pregnant women also receive information from their attending physicians or other health service providers consulted during pregnancy. Information is usually provided orally during examinations undertaken as part of the mother-child pass examination programme.

In the course of the general anamnesis undertaken for the first mother-child-pass examination, the woman is asked about various risk factors (familial exposures, psychosocial exposure, infectious diseases, vaccination status, status post varicella, smoking habits before and during pregnancy, increased alcohol consumption, drug consumption, previous personal severe illnesses and operations, status following section or other uterus operation, disposition to bleeding/thrombosis, permanent medication and allergies). In addition every mother has to be asked about her smoking habits (cigarettes

⁵⁷ BMGFJ (2005). Austrian Women’s Health Report. Vienna. 2005

per day) at each of the five gynaecological examinations. During gynaecological and laboratory tests, protein, glucose and iron levels are assessed from which conclusions can be drawn on nutritional habits.

Responses of the woman to the above mentioned questions on risk behaviours or test results are documented in the mother-child-pass. Follow-up measures are not defined, namely whether and how the physician is supposed to react to the information given, whether he is expected to inform the woman about potential consequences or alternative ways of handling the risks.

During the first gynaecological examination before the end of the 16th week of pregnancy, the mother-child pass instructs the gynaecologist to inform his or her patient whether she is (based on her health status) fit to engage in birth preparation gymnastics. The physician has to document the outcome of his assessment in the mother-child pass (yes/no).

Most magistrates give mothers who have recently delivered a baby a welcome package. The content of these packages varies depending on the municipality. In Vienna the voucher for receiving it is handed out by MAG ELF, the Department for Family and Youth of the municipality of Vienna, at hospitals or parent-child-centres. The package contains information material, vouchers for clothing and nappies and a document folder. Some representatives of the authority regularly visit mothers in the individual hospitals.

Women, partially upon request, receive advertising packages from companies producing baby articles such as creams, food, nappies, etc.).

Not standardised information

Health professionals may distribute written information (leaflets or brochures) to the women. With regard to the written and oral information provided by health professionals it is assumed that the manner and extent of information provided is subject to great variation.

Brochures, e.g. on breastfeeding are also distributed through the Ministry of Health (on demand, through hospitals or gynaecologists), regional or local health authorities, hospitals (partially in a standardised manner) or mother-child centres/mother-parents-centres/parents-child centres (e.g. in Salzburg, a representative from a mother-child-centre visits all mothers in hospitals to give them a brochure applicable to their place of residence). Brochures are usually also available in languages other than German.

MAG ELF, the Department for Family and Youth of the municipality of Vienna has published an information brochure “Concerning the baby”⁵⁸ which provides information on topics such as birth preparation, delivery, legal entitlements, executions before and after birth, healthy nutrition, personal hygiene for mother and baby, creativity and playing, sexuality and body awareness as well as contact information. The brochure exists in two versions, one for Vienna and the other for Austria.⁵⁹ On the complementary website women are offered a large variety of information on the time before and after birth.

The city of Vienna initiated a Women’s Health Programme in 1998/1999 including 12 areas which received special attention, one being the care of pregnant women as well as assistance in the situation of postnatal depression. As part of this programme a brochure on pregnancy related issues such as nutrition, physical activity, relaxation and sleep has been published as well as specific brochures on drinking alcohol and smoking during pregnancy⁶⁰ which detail the risks and consequences of drinking alcohol and smoking during pregnancy, includes a self-test on drinking and smoking habits as well as giving contacts for further information. Other activities of the city of Vienna include the installation of a

⁵⁸ German title: Rund ums Baby

⁵⁹ Information on the brochure „Concerning the Baby”. accessed at <http://www.babyratgeber.at/index.cfm/type/easy/orderid/36> on 30 November 2008

⁶⁰ Brochure on alcohol during pregnancy, accessed at <http://www.fsw.at/export/sites/fsw/fswportal/downloads/broschueren/frauengesundheit/RauchenAlkoholSchwangerschaft.pdf> on 30 November 2008

special outpatient department for women suffering from mental and social crisis during pregnancy and after birth at the hospital Wilhelminenspital.⁶¹

MAG ELF has also been responsible for the scientific support and evaluation in a project initiated in January 2008 which is based on a co-operation between representatives of the Social Democrats Party and representatives of the Green Party and deals with early support and promotion of children from socially disadvantaged families living in the 15th district in Vienna. In the course of the project pregnant women are identified by means of a risk screening and invited to participate.

Other women’s health institutes/health centres or women’s health programmes exist in Tyrol (Innsbruck) and in Styria (Graz).⁶² These also undertake several activities with regard to pregnancy. In Styria for instance a health promotion project for pregnant women and mothers of babies in special municipalities has been initiated.

Women can visit mother-child centres/parents-child centres, which will provide them with written and oral information. These centres are generally run by the municipal or the district authorities and sometimes by the church.

Many women attend birth preparation classes or gymnastics classes⁶³ during pregnancy. Sometimes these two are combined. Especially during birth preparation classes women receive information on pregnancy and birth related matters. Information given is not standardised and participation is voluntary.

The Internet is a major source of information for many pregnant women. Health authorities, health service providers and other institutions list information on their websites. Due to the large amount of information it may be difficult for women to filter the information with respect to the quality of its contents.

Telephone hotlines can be another resource of information for pregnant women. The hotline “pregnant–the information telephone” was introduced as part of the Vienna Programme for Women’s Health.⁶⁴

Also fairs such as the Femvital Women’s fair, which takes place every year in Vienna, present an opportunity to address and inform mothers, pregnant women and future mothers.

A crucial question with regard to information is whether women feel well informed about:

- the mother-child-pass examination programme
- any other issues related to pregnancy and birth

In a survey conducted by Pass among 3,000 women receiving maternity benefits in 1999, 83% of the responding women stated that they felt sufficiently informed about the examinations undertaken in the course of the mother-child-pass examination programme.⁶⁵ Women with a higher level of education or with a higher household income seemed to feel better informed about the mother-child-pass examination programme than women with a lower level of education or a lower household income.

For the present study consulted health professionals were asked to list information given to pregnant women in Austria. Their responses summarise the heterogeneous situation with respect to information and advice offered to pregnant women in Austria. The perception of “standardised information” appears to vary among health service providers, some giving the impression that a great variety of standardised information exists, others conveying that the information just quoted to be standardised is not standardised. It is assumed that most women receive a reasonable amount of information on pregnancy related information. Information on birth modalities or the time after birth is largely not standardised and the information status of the woman will depend on whether she attends a birth preparation class and on whether she consults a midwife. Responsibilities (Who provides which information?) do not

⁶¹ DieSie, Women’s Health Programme Vienna’ Section for health promotion and women’s health. Fund Social Vienna (*Fonds Soziales Wien, FSW*)

⁶² BMGFJ (2005). Austrian Women’s Health Report. Vienna. 2005

⁶³ Other classes offered are for instance Yoga classes or classes for meditation and relaxation training.

⁶⁴ Wiener Programm für Frauengesundheit, Jahresbericht 2007, accessed at

http://www.diesie.at/export/sites/fsw/diesie/downloads/dokumente/jahresbericht_2007.pdf on 28 November 2008

⁶⁵ Claudia Pass (2001). Utilisation of the mother-child pass. An example of the interaction between social status and health? Schriftenreihe Gesundheitswissenschaften volume 19. Linz 2001

appear to be defined, apart from the assumption that physicians focus mostly on medical information and midwives take a more comprehensive view and give information on medical issues, psychological matters and also aspects such as nutrition, procedural issues, child care or breast feeding. For further details on the responses of individual health professionals, see Annex 1.

2. Mother-child-pass examination programme

2.1 Introduction and historical development⁶⁶

The Austrian mother-child-pass examination programme is a screening programme for pregnant women and their children which was introduced in 1974. It pursues the following aims:

- Ensuring basic medical care for pregnant women and their children
- Prevention for pregnant women and their children
- Promoting early detection and timely treatment of health risks
- Facilitating monitoring of the development status of the child

As part of the above mentioned programme all pregnant women receive a mother-child pass which is a booklet documenting all examinations and their results. It is issued by the Federal Ministry of Health and represents an official document. Together with the pass, women receive an international certificate of vaccination. A new edition of the mother-child-pass is printed every year. This does not automatically mean that revisions have been made. If amendments have been undertaken these are incorporated into any new edition. All examinations listed in the mother-child pass are free of charge for mothers and their children, even for those without social health insurance coverage.

Pregnant women usually obtain a mother-child pass from their attending gynaecologist; other points of access are their GP, their midwife or a range of health institutions such as the administrative district authorities, the health authorities of the magistrates, outpatient-clinics, hospitals with gynaecological departments, outpatient-departments of birth clinics or counselling offices for women. Further points of contact for any queries related to the examination programme are the social health insurance funds and the Federal Ministry of Health.

When it was introduced in 1974, the mother-child examination programme involved four examinations of the pregnant woman including an internal (physical) examination (performed by a doctor of internal medicine) and laboratory tests. Over the past 34 years the mother-child-pass examination programme has only undergone few substantial changes which are described in the following paragraphs.

In 1975 four child examinations were added for children up to the age of 14 months. At the time Austria was one of the first countries to introduce screening for toxoplasmosis during pregnancy.⁶⁷ In 1982 a further child examination was introduced for children at the age of two years (22 to 26th postnatal month). In 1987 a fifth examination of the pregnant woman was added as well as two examinations of the child (34 to 38th and 46 to 50th postnatal month). Moreover special examinations were added to test the vision and hearing abilities as well as the musculoskeletal system of the infant respectively the child. The hearing examination should be undertaken between the 7th and the 9th postnatal month (by an otorhinolaryngologist, a GP or a paediatrician), the first eye examination between the 10th to 14th postnatal week (by an ophthalmologist or in a specialised ambulatory clinic) and the second eye examination between the 22nd and the 26th postnatal month (by a GP, a paediatrician, an ophthalmologist or in a specialised ambulatory clinic) and the orthopaedic examination between the 4th and 7th postnatal week (by a GP, a paediatrician, an orthopaedic specialist or in a special ambulatory clinic for paediatrics).

At the same time two ultrasound examinations for the pregnant woman were added to the mother-child programme (18th to 22nd week and 30th to 34th week). In 1992 the programme was supplemented by a Hepatitis B test for the pregnant woman (part of the laboratory examination 25th to 28th week of pregnancy) as well as an ultrasound examination of the infant's hip (6th to 8th postnatal week). The mother-child programme was complemented by another examination for children at the age of five years (58th to 62nd postnatal month) in 2002.

In the 2008 edition the following optional laboratory examinations (25th to 28th week) were added: HIV, screening for β -haemolytic streptococci and oGTT testing (75g glucose) mg/dl. The 2008

⁶⁶ BMG (then BMGFJ), response to an email enquiry, received 11 November 2008.

⁶⁷ Claudia Pass (2001). Utilisation of the mother-child pass. An example of the interaction between social status and health? Schriftenreihe Gesundheitswissenschaften volume 19. Linz 2001

amendment of the Mother-Child-Pass Directive (which has in the mean time been cancelled by the 2009 amendment) envisioned the following changes as of 1 January 2010 and 1 July 2010:

From 1 January 2010 the examination taking place between the 25th and the 28th week of pregnancy should include an oGTT and an additional ultrasound examination should be performed between the 8th and 12th week of pregnancy.

As of 1 July 2010 the internal (physical) examination which is currently undertaken between 17th and 20th week of pregnancy should be excluded from the programme. Instead women should be advised to undertake the periodic health examination (based on §132b of the General Social Insurance Act and the respective regulations in the other social insurance acts).

In October 2009 it was still uncertain whether the above detailed changes were effectively going to be implemented, even though the corresponding legislation has already been enacted (2008 amendment of the mother-child-pass directive, see section 2.2. for details). Whereas physicians opposed the exclusion of the internal examination, social insurance did not favour the idea of encouraging pregnant women to undertake a periodic health examination, partially because the examination programme is not intended for the target group of pregnant women but for the general population (18 years and older).

In December 2009 another amendment of the Mother-Child-Pass Directive came into effect which cancelled the 2008 Directive and stipulated the subsequent modification of the mother-child-pass-examination programme from 1 January 2010:

The blood examination taking place before the 16th week of pregnancy should include an HIV test, the examination undertaken between the 25th and the 28th week of pregnancy should include an oGTT test. Both of these tests feature a requirement for the further receipt of the full child-benefit. Furthermore an additional ultrasound examination should be performed between the 8th and 12th week of pregnancy. The ultrasound examination is, like the other ultrasound examinations, not linked to the receipt of the child benefit in any way. The internal (physical) examination remains within the examination programme and the recommendation for women to undertake the periodic health examination is cancelled.

Changes in the layout of the documentation have been undertaken fairly frequently. The 2008 edition for instance contained a new overview of complications occurring during pregnancy. These are listed in section 2.6.1 of this report.

In the 2009 edition documentation for the following tests was changed: RH-antibody-search test, Anti-D-prophylaxis, oGGT, screening for streptococci, HIV. These could only be provided by the physician when based on a medical indication. This made their provision an insured event of “illness” which is not within the scope of prevention respectively screening (the mother-child-pass examination programme) and therefor has to be reimbursed by social health insurance.

As of 1 January 2010 a HIV test and an oGTT test have to, as described above, be undertaken by all women before the 16th week of pregnancy respectively between the 25th and the 28th week of pregnancy. Screening for β -haemolytic streptococci was excluded from the mother-child-pass examination programme as of January 2010.

2.2 Legal foundations

The following legal foundations are relevant for the mother-child-pass examination programme:

- Mother-Child-Pass Directive 2002 (Mutter-Kind-Pass-Verordnung), MuKiPassV, BGBl. 470/2001 and its amendments BGBl. II No. 430/2008 and 448/2009
- Family Burdens Equalisation Act 1967 (Familienlastenausgleichsgesetz), XX, BGBl. 376/1967
- Child Benefit Act (Kinderbetreuungsgeldgesetz), KBGG, BGBl. 103/2001
- General Social Insurance Act, BGBl. 189/1955 as amended by BGBl. I No. 52/2009
- The Mother-Child-Pass Directive defines the aims of the mother-child-pass examination programme, responsibilities of the stakeholders involved, requirements to continue receiving the full child benefit, examinations of the mother and the child and the format and contents of the pass.

The Family Burdens Equalisation Act regulates the mother-child bonus and the funding of the Family Burdens Equalisation Act as well as the utilisation of the means in the fund.

The *Child Benefit Act* regulates the conditions under which mothers continue to receive the full amount of the child benefit, a cash benefit paid to mothers during a certain amount of time.⁶⁸ Attendance at selected examinations has to be verified in order to comply with these requirements. The Act also states that expenses for the mother-child-pass examination programme have to be covered by the Family Equalisation Fund. The Child Benefit Act furthermore regulates the rights of the Minister of Health to investigate and process data in connection with the mother-child-pass examination programme. It moreover defines the obligation of the Main Association of Austrian Insurance Institutions (Hauptverband der österreichischen Sozialversicherungsträger) to provide the Minister of Health with data generated in connection with the mother-child-pass examinations. In all cases it is prohibited to pass on person-based data.

The *General Social Insurance Act* regulates the payment of expenses for maternity cash benefits by social health insurance funds. Maternity cash benefits are covered by the Family Burdens Equalisation Fund (70%) and by social health insurance funds (30%).

Further documents relevant for maternity care are the contractual agreements between social health insurance and their contract providers/contract organisations and the contracts between private health insurance companies and their contract partners. For services provided as part of the mother-child-pass examination programme a general contract was signed between the Hauptverband and the Austrian Medical Association in 1974. It is supplemented by a number of amendments in form of additional agreements.

2.3 Target audience

The mother-child-pass examination programme is targeted at all pregnant women and women with children under the age of 62 months in Austria. Also, women who do not have Austrian nationality or those not covered by social health insurance are entitled to take part in the programme.

2.4 Funding

The provision of mother-child-pass examinations is mostly undertaken by contract providers of social health insurance funds in their practices. Hospitals do not conduct mother-child-pass examinations. They are involved if complications arise which potentially result in the woman being admitted for inpatient care. Based on the Family Burden Equalisation Act, mother-child-pass examinations for women with social health insurance coverage are funded by the Family Burdens Equalisation Fund (*Familienlastenausgleichsfonds, FLAF*) (2/3) and by the social health insurance funds (1/3). Mothers without social health insurance coverage need to obtain a certification of entitlement from their regional sickness fund (place of residence) in order to access examinations free of charge (at contract physicians). The cost of their examinations is covered entirely by the Federation.

Services provided by contract providers to mothers and their children as part of the mother-child-pass examination programme are either special mother-child services, which are coded and reimbursed the same way by all insurance funds or are other services which are reimbursed according to the curative reimbursement catalogues of the individual health insurance funds (different coding and tariffs for each fund). Special mother-child services are listed in the general contract on the execution of mother-child-

⁶⁸ For further details on the height of the benefit see section 2.8.2, specifically the sub-section on financial incentives. Recipients could until recently choose from three different options, depending on the entitlement period (15+3, 20+4 or 30+ 6 months (only one parent + additional months if parents share the responsibility of staying at home) thereby receiving between €436 and €800 per month). In 2009 two additional models were introduced, one which envisions the payment of a monthly child benefit of €1000 for 12+2 months and another which involves the payment of an income-dependent child benefit (80% of last net income, minimum of €1000 and maximum of €2000) for 12+2 months. Regulations concerning the child benefit for single parents, the amount of additional income parents who claim the benefit can earn and the additional child benefits for further children were also changed. The two new models can be chosen for babies born after 30 September 2009. For further details (in German) see <http://www.frauen.bka.gv.at/DocView.axd?CobId=36711> and <http://www.frauen.bka.gv.at/site/6809/default.aspx>, Accessed 10 October 2009

examinations and in the XVIII additional agreement. For more details see section 2.5, specifically on social health insurance.

Services provided by private health care providers (doctors, midwives, etc.) have to be paid in advance by the patient who can claim partial reimbursement retrospectively. Some women decide to take out voluntary health insurance.

Social health insurance funds are, by law, not obliged to provide prevention services. They have to however provide services related to health promotion. The focus of social health insurance lies on the provision of health services in the case of illness. Prevention services can, depending on the financial possibilities of the insurance fund, be provided at the dutiful discretion of the health insurance fund. With regard to the mother-child-pass examination programme, social health insurance funds cover a share of the total examination costs.

The agreement according to § 15a of the Federal Constitutional Act regulates that the lump sum paid by the social health insurance funds to the regional health care funds for hospital care does not cover services provided in connection with the mother-child-pass examinations.

If a pregnant woman (with social health insurance coverage) is admitted to hospital for inpatient care, the expenses of her stay are, if justified, covered by her social health insurance fund as part of the yearly lump sum payment made to the regional hospital fund mentioned above. Daily additional payments by patients for hospital care are not applicable to maternity care.

2.5 Stakeholders

The mother-child-pass examination programme concerns a range of stakeholders who are listed in the table below. More detailed descriptions are given in the sections following the table.

Table 11: Mother-child-pass examination programme: Stakeholders

Stakeholder	Responsibility
Federal Ministry of Health/ Bundesministerium für Gesundheit, BMG	<ul style="list-style-type: none"> - Developing and enforcing basic legislation - Coordination of involved stakeholders - Receives funds from the FLAF for the execution of the mother-child-pass examinations - Definition of a directive regulating the examinations of the mother-child-pass examination programme (Mother-Child-Pass Directive) - Commissioning the printing of the mother-child pass and distribution of the passes to the regions - Confirmation of the general contract on the execution of mother-child-pass examinations and the special mother-child-pass tariff positions - Initiation of revisions of (general) contract or tariffs - Compensation of services through means originating from the FLAF: maternity cash benefit, expenses for mother-child-pass examinations - Verification and confirmation of final accounts from the Hauptverband concerning the expenses for mother-child-pass examinations and maternity cash benefits - 100% coverage of expenses for mother-child-pass examinations for women without social health insurance from means of the FLAF - Coordination, preparation and follow-up of the meetings of the mother-child-pass committee - Liaising with experts in the field - Commissioning research

Table 11 continued

Federal Ministry of Economy, Family and Youth / <i>Bundesministerium für Wirtschaft, Familie und Jugend, BMWFJ</i>	- Administration of the FLAF, distribution of means to various recipients
Mother-child-pass committee	- Revision of mother-child-pass examination programme - Discussion of related topics - Reporting to the Supreme Sanitary Council
Supreme Sanitary Council (OSR)	- Approving decisions and suggestions of the mother-child-pass sub-committee and passing these on to the BMG
Regions	- Distribution of mother-child passes in their region
Municipalities	- Distribution of mother-child-passes by local health authorities
Main Association of Austrian Social Insurance Institutions	- Negotiation and signing of the general contract on the execution of mother-child-pass examinations including the special mother-child tariffs - Initiation of revisions of the general contract or tariffs - Documentation of the services provided and expenses incurred by social health insurance funds for mother-child-pass services - Calculation of refund for health insurance funds from FLAF - Reporting on final accounts on expenses for mother-child-pass examinations and maternity benefits to the BMG - Compilation of basic statistics on maternity benefits
Social health insurance funds	- Partial funding of examinations undertaken as part of mother-child-pass examination programme (one third). Initially full reimbursement of mother-child-pass examinations; followed by a refund (two thirds) through the FLAF - Reimbursement of maternity services (physicians, midwives, nurses) as part of the insured event of maternity - Reimbursement of the stay in a hospital or a maternity clinic when delivering the baby (for a maximum of 10 days). Stays longer than ten days are classified as insured events of illness - Partial funding of the maternity cash benefit (30%) - Ensuring accessible and high quality care provided by contract partners - Documentation and reimbursement of utilised maternity care services, reporting of the relevant data for the final accounts of the expenses on mother-child-pass examinations to the Hauptverband
Austrian Medical Association	- Negotiation and signing of the general contract for the execution of mother-child-pass examinations including the special mother-child tariffs - Initiation of revisions of the general contract or tariffs
Health service providers: * Contract physicians * Own institutions of the social health insurance funds * Other health service providers	- Provision of services - Information of the mother - Detection of high risk pregnancies and initiation of follow-up action - Documentation of outcomes (in the mother-child-pass booklet and in their practice software)

Table 11 continued

Mothers	<ul style="list-style-type: none"> - Compliance with mother-child-pass examination programme - Coordination of documentation in form of mother-child pass - Forwarding of confirmations of examinations to their social health insurance fund
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Source: Authors' own illustration

Federation

The responsibility for the provision of public health services in Austria rests with the regions which, to a great extent, delegate their duties to the district or local authorities. Among many other aspects the public health service is in charge of maternity care, e.g. overseeing the mother and child preventative programme (mother-child-pass examination programme).⁶⁹

According to article 12 of the Federal Constitutional Act, the development of basic legislation concerning the welfare of mothers, infants and the young is under the authority of central government, whereas the responsibility for the executive legislation (enforcement, implementation) rests with the federal states.

Federal Ministry of Health

The mother-child-pass examination programme is planned, implemented and overseen by the Ministry of Health (BMG), former Ministry of Health, Family and Youth (BMGFJ) which is advised by the mother-child-pass committee, a sub-committee of the Supreme Sanitary Council. The BMG is also responsible for printing the mother-child passes (including the complementary information booklet) and for distributing them to the regions.

The BMG has to agree to the general contract on the execution of mother-child-pass examinations which is negotiated and signed by the Hauptverband and the Austrian Medical Association. Revisions of the general contract or the tariffs can be initiated by any of the three parties involved. Issues related to maternity care are to a great extent managed by one representative at the ministry who is at times assisted by two employees of the ministry.

Federal Ministry of Economy, Family and Youth

The Family Equalisation Fund is overseen by the Federal Ministry of Economy, Family and Youth. Respective funds for maternity care (execution of the mother-child-pass examination programme, maternity benefit, child benefit) are allocated to the respective recipients (Ministry of Health).

*Supreme Sanitary Council*⁷⁰

The Supreme Sanitary Council (*Oberster Sanitätsrat*, OSR) is a medical-scientific body which consists of 39 members who are high-ranking representatives of various specialties of the medical sciences as well as experts on health planning, financing, nursing, quality assurance, physiotherapy and alternative care. Members are appointed for a period of three years; a chair is elected by the members among themselves. They work on an honorary basis. The OSR is a counselling and advisory body to the Ministry of Health with regard to general medical issues as well as providing expert opinions and meets twice a year. Activities of the Council are strictly confidential; recommendations are not binding for the federal minister.

The legal foundation of the Supreme Sanitary Council is the Imperial Sanitary Act (*Reichssanitätsgesetz*) originating from 1870. Initially it focussed on the care of mother and child, the reduction of infant mortality and on combating infectious diseases. The OSR also plays a key role in the development of child vaccination programmes.

⁶⁹ Hofmarcher, M., Rack, H.M. (2006). Health Systems in Transition. Austria. Copenhagen, World Health Organization on behalf of the European Observatory on Health Systems and Policies.

⁷⁰ Marina Hufnagl (Federal Ministry of Health). reply to telephone enquiry, dated 7 August 2008
Hofmarcher, M., Rack, H.M. (2006). Health Systems in Transition. Austria. Copenhagen, World Health Organization on behalf of the European Observatory on Health Systems and Policies.

The OSR has various subcommittees such as the Aids-Committee, the vaccination-committee, the dental-committee and the mother-child-pass committee. More recently established subcommittees include a Public Health Committee (2004); a commission dealing with quality assurance in the treatment of addictive disorders was established (2007).

Mother-Child-Pass Committee

The mother-child-pass committee currently has 12 members who are all doctors with different types of expertise (maternity care, child care, laboratory medicine, public health, etc.). It is argued that all members are physicians because the mother-child-pass examination programme is a medical programme and contains medical services only. One of the members has been invited to join the committee in preparation of substituting another member in the near future. Members are appointed by the Minister of Health for a term of three years. Among them they elect a chairperson, also for a period of three years. Changes in the constitution of the committee are discussed in the course of appointing new members. Previously members of the committee were mostly also members of the OSR and all members were men; both of these aspects have changed. In addition to ensuring a certain diversity of medical expertise among the members of the committee it is also intended to consider a variety of different professional backgrounds when it comes to selecting the members, such as clinical work (in both the inpatient and the outpatient setting), research, work in medical societies or in professional representations.⁷¹

The committee is managed by a representative of the Ministry of Health who takes part in the meetings which are held twice a year. It is responsible for issuing recommendations on revisions or changes of the mother-child-pass examination programme. Discussions of revisions stem from enquiries, suggestion and current events which are placed on the agenda by the Ministry representative. The committee assesses existing examinations as well as questioning current health risks and suggesting the initiation of measures as a consequence. The mother-child-pass committee is obliged to report to the OSR, which holds a plenum twice a year. Recommendations of the mother-child-pass committee are presented in the meeting and have to be supported by the OSR before being submitted to the Ministry of Health in the form of recommendations of the ORS. If required, meetings can be arranged at short notice.

Regions

The regions are responsible for the distribution of mother-child passes on the regional and the local level. Usually the regional sanitary directorates (*Landessanitätsdirektionen*) or the health departments of the regional government authorities deal with issues related to maternity care. The regions are obliged by law to provide hospital services for their inhabitants. The mother-child-pass examination programme does normally not involve any examinations in hospitals. Women experiencing high risk pregnancies may however have to undergo additional examinations in a hospital or may even have to be admitted for inpatient care, normally following a referral from their attending physician (GP or gynaecologist).

Social health insurance

The Main Association of Austrian Social Insurance Institutions (*Hauptverband*) is responsible for the negotiation and signing of the general contract on the implementation of mother-child-pass examinations with the Austrian Medical Association (Chamber of Doctors). Tariffs have remained unchanged since the XVIII additional agreement to the general contract in 2001 (new tariffs valid from January 2002), even though their validity has, according to the before mentioned additional agreement, expired on 31 December 2003. As long as none of the contract partners or the BMG initiates a discussion on the revision of the general contract or the tariffs, these remain valid and unchanged.

Not all benefits provided to women and children in the course of the mother-child examinations are reimbursed according to the tariffs agreed upon in the general contract/the additional agreements, which are called special mother-child benefits. 21 such tariff positions exist which are assigned national tariffs and codes (for all health insurance funds). Other services provided as part of the mother-child-pass

⁷¹ Members of the mother-child-committee: 5 gynaecologists, 5 paediatricians one of whom is also a neonatologist, 1 specialist of laboratory medicine and one public health expert. Administration: representative of the Ministry of Health, Family and Youth

examination programme are reimbursed according to existing reimbursement catalogues for curative care (this applies to e.g. basic remuneration per case or per time period or laboratory tests). Ultrasound examinations are listed as special mother-child-benefit but still have different codes and tariffs among health insurance funds. For social health insurance funds it is, with few exceptions, not possible to quantify the exact amount of services provided for mother-child-pass examinations but billed following the curative reimbursement catalogue, as these are not specifically coded by contract providers.⁷² If health insurance funds asked their contract providers to do so they would most likely be faced with demands to increase tariffs, compensating providers for extra administrative effort. Expenses for special mother-child-services and expenses resulting from the billing of curative services both amount to about 50% of total expenses.

The Ministry of Health transfers instalments for services provided by social health insurance funds as part of the mother-child-examination programme from the Family Burdens Equalisation Fund to the Hauptverband four times a year which then passes them on to the individual social health insurance funds. Instalments are calculated based on historical expenditure patterns. At the end of the year the Hauptverband has to, based on the reports of the individual health insurance funds, calculate whether funds have overspent/underspent their instalment for mother-child-pass examinations. Calculations are based on the special mother-child services. For these calculations an average case value is calculated which considers all services provided for the mother-child-pass examination programme. The result is a case value for each health insurance fund stating the average amount spent on mother-child-pass services. This value is then multiplied by the number of deliveries (for examinations of women during pregnancy) and with the number of children (for examinations of children) in order to receive the average total cost. Consideration is taken of pregnancies that stretch over more than one calendar year. The actually reimbursed services and expenses have to be reported to the Ministry of Health on a yearly basis.

Health providers

The mother-child-pass examination programme only involves examinations undertaken by contract doctors of social insurance. The general contract signed between the Hauptverband and the Austrian Medical Association forms the legal basis of the entitlement. Individual contracts are not required such as for the provision of curative services or the provision of periodic health examinations (*Vorsorgeuntersuchung*). Examinations can be provided by GPs or defined specialists⁷³, depending on the professional requirements. For more details see table 2 in section 2.7. Further information on the examinations is given in section 3.3 of this report.

Mothers

Women participating in the mother-child-pass examination programme are encouraged to attend all examinations. They are required to bring their mother-child-pass booklet along every time they consult a physician to ensure complete documentation of test results. The mother-child pass is to be treated by them like an official document. Women are obliged to forward the confirmations of having attended the examinations to their social health insurance fund in order to ensure that they continue receiving the entire amount of the child benefit. Mothers are, in general, asked to read any information provided in the mother-child pass or the adjoining booklet very carefully.

2.6 Examinations, services provided

Examinations and tests listed in the following two sections are based on the 2009 edition of the mother-child-pass, published by the Federal Ministry of Health (then Federal Ministry of Health, Family and Youth).

2.6.1 Overview

The mother-child-pass examination programme involves five examinations of the pregnant woman and nine of the child, ultrasound examinations not yet included. It spans a timeframe of about 70 months,

⁷² Laboratory services of the regional sickness fund of Vienna are specifically coded if they are provided for pregnant women as part of the mother-child-pass programme

⁷³ As defined in the general contract respectively the additional agreements to the contract

beginning with the first diagnoses of pregnancy (favourably before the 16th week of pregnancy) and lasting until the 62nd month of the child’s life.

Examinations are listed in the general contract on the execution of mother-child-pass examinations, signed by the Hauptverband and the Austrian Medical Association and in the supplementary agreements. The scope of the examinations is defined by the Mother-Child-Pass-Directive 2002 and reflected in the mother-child-pass. No guidelines or regulations on the implementation or execution of these examinations exist. Performance of the examinations is left to the appreciation of the individual contract physician.

As mentioned before, the focus of this report is placed on antenatal care. In order to continue receiving the entire child benefit, the pregnant woman has to undergo all of the antenatal examinations mentioned above, apart from the ultrasound examinations.

Table 12 at the end of this section provides the reader with an overview of the antenatal examinations as defined by the mother-child-pass examination programme. A more detailed description of each of these is given in section 2.6.2. Health professionals involved in the individual examinations are also listed in the table.

In addition to the documentation related to the above listed examinations, the mother-child-pass examination programme requires the respective attending health professionals (usually the gynaecologist or GP) to document various aspects of antenatal care occurring during the pregnancy as described in the following sections.

Complications during pregnancy-special occurrences/test results

The physician is asked to tick off boxes in a list of predefined complications in the mother-child pass. These involve: Bleeding prior to the 28th week of pregnancy, bleeding after the 28th week of pregnancy, placenta previa, polyhydramnion, oligohydramnion, placenta insufficiency, preliminary contractions, cervix insufficiency, anaemia, infection of the urinary tract, indirect Coombs test positive (Rh), risk originating from one of the other serological tests, hypertension (Y 140/90 mmHg), proteinuria (> 1g/l), medium-severe oedemas, gestational diabetes. Further notes can be added on general illnesses requiring treatment and other irregularities.

Fetal irregularities

The attending physician is asked to document any fetal irregularities occurring during the pregnancy.

Inpatient care

The physician has to record any inpatient stays of the mother during the pregnancy by documenting the length of stay, the hospital, the diagnosis and the treatment.

The mother-child pass includes graphs displaying the development of biparietal diameter, head circumference, abdomen circumference and length of femur during the first 40 weeks.

Table 12: Provision of mother-child-pass examinations - Examinations conducted during pregnancy¹ and involved health professionals

Time	Type of examination	Health professionals involved	Coverage	Details
In the majority of cases antenatal examinations are undertaken by gynaecologists in their practices. Examinations are sometimes also performed by GPs or doctors of internal medicine (internal (physical) examination). Examinations can also be executed in the own institutions of social health insurance funds. Pathologists (cytologists) and/or doctors of laboratory medicine may be involved in the execution of tests and interpretation of test results. General practitioners are entitled to undertake all antenatal examinations instead of the respective specialist (apart from the interpretation of the PAP smear or the laboratory tests).				
8 th to 12 th week	- Ultrasound examination	GA, R	FLAF/SHI	
Before end of 16 th week	- Anamnesis including gynaecological anamnesis - Gynaecological examination - Laboratory test	GA or GPA, PC/LC, L	FLAF/Social health insurance (SHI)	Required for the provision of the entire child care benefit
17 th to 20 th week	- Gynaecological examination - Internal examination	GA or GPA, DI or GP	FLAF/SHI	Required for the provision of the entire child care benefit
18 th to 22 nd week	- Ultrasound examination	GA, R	FLAF/SHI	
25 th to 28 th week	- Gynaecological examination - Laboratory test	GA or GPA, L	FLAF/SHI	Required for the provision of the entire child care benefit
30 th to 34 th week	- Gynaecological examination	GA or GPA	FLAF/SHI	Required for the provision of the entire child care benefit
30 th to 34 th week	- Ultrasound examination	GA, R	FLAF/SHI	
35 th to 38 th week	- Gynaecological examination	GA or GPA	FLAF/SHI	Required for the provision of the entire child care benefit

Source: Author’s own illustration based on the mother-child pass

1) The focus of this study is placed on antenatal care. Postnatal examinations of the mother-child pass are not included in the table

Abbreviations: GPA= General practitioner working outside of the hospital in a practice, GA=gynaecologist working outside of the hospital in a practice, GI= gynaecologist working in a hospital (Often gynaecologists are employed in hospitals and have their own practice in addition). Only in rare cases will GA be GI (e.g. in private clinics where patients are allowed to bring along their chosen doctors), PC=pathologist/cytologist, LC= specialist of laboratory medicine with an additional training in cytology, L specialist for laboratory medicine. Usually gynaecologists refer their patients to an external laboratory for blood tests, some GPs may also take the blood sample and send it to the laboratory, DI = doctor of internal medicine.

2.6.2 Detailed description of examinations

All five gynaecological examinations follow the same structure and have to include a thorough anamnesis, a gynaecological examination (vaginal examination), documentation of risk factors affecting the mother or the child, and an assessment of the necessity of performing further examinations.⁷⁴

8th to 12nd week

Ultrasound examination

An additional early ultrasound examination was added to the mother-child-pass examination programme by the 2009 amendment of the Mother-Child-Pass Directive which came into effect as of 1 January 2010.

Before end of 16th week

General anamnesis

Initially the physician performs an anamnesis of the mother, documenting her age, weight before pregnancy, height, menstruation, the number of pregnancies (gravida) and (among these) early miscarriages and late miscarriages as well as extrauterinary pregnancies. Furthermore a note is made on the number of births (para). With regard to previous pregnancies, the physician records the date, sex of the child, weight, week of pregnancy and place of delivery as well as describing any complications occurring during pregnancy, the mode of delivery and complications arising during delivery and child-bed.

Other risk factors and test results recorded in the course of the anamnesis which have to be ticked off by the physician in a predefined list (No/Yes) are the following: Familial exposures (diabetes, hypertension, malformations, hereditary diseases, mental illnesses), psychosocial exposure (familial or work-related, problems regarding integration, economic difficulties), infectious diseases/vaccination status known, status post varicella, smoker before pregnancy, smoker during pregnancy, increased alcohol consumption, drug consumption, previous severe illnesses and operations, status following section or other uterus operation, disposition to bleeding/thrombosis, permanent medication and allergies. Space is also provided for additional information or elaborations.

Gynaecological anamnesis

The attending physician is asked to record whether the pregnant woman has undergone sterility treatment. He calculates the expected date of birth by questioning the woman about the first day of her last regular period. Following the verified date of birth is stated as well as the date of the examination.

As part of the gynaecological anamnesis the physician documents the week of pregnancy + days and reports whether the gynaecological status is free of pathological findings. Results of a breast examination also have to be recorded as well as the result of a PAP-smear and vaginal secretion. After making a note of whether the pregnant woman is fit to attend gymnastic sessions, the physician confirms the documentation by adding the date and his signature or stamp.

Gynaecological examination

The five gynaecological examinations undertaken as part of the mother-child-pass examination programme all follow the same structure. The physician documents: the date, the week of pregnancy + days, the weight of the mother in kilos, her potential consumption of nicotine (cigarettes per day), her blood pressure, oedemas and varices, the position of the baby (cephalic or breech presentation), heart sounds, fetal movements, gynaecological status (vaginal status, status of cervix), urine test result, irregularities, prescriptions and any other relevant information. This examination is the same at each visit, where indicated below.

⁷⁴ §§ 3 and 4 of the Mother-child-pass-directive 2002 (*Mutter-Kind-Pass-Verordnung*), MuKiPassV, BGBl. 470/2001

Laboratory test

The first laboratory examination involves the following tests/treatments:

- Blood group and rhesus factor
- RH-antibody-search test
- Anti-D-prophylaxis
- Rubella antibodies
- Lues reaction (TPHA)
- Test for toxoplasmosis
- Erythrocytes count (units) or haematocrit (%)
- Haemoglobin: g/dl
- HIV test

17th to 20th week

Gynaecological examination (same structure as before end of 16th week)

Internal/Physical examination

An internal status is recorded by either a GP or a doctor of internal medicine. This includes an examination of the woman’s nose and throat, teeth, neck, cardiovascular system, blood pressure, lungs, abdomen, skeleton, extremities, skin and nervous system for abnormalities. The doctor is asked to give a complete medical statement as well as signing the form/using a stamp.

18th to 22nd week

Ultrasound examination

The ultrasound examination is performed by a gynaecologist or a radiologist. It involves the documentation of the following aspects: date of examination, week of pregnancy + days, number of fetuses, localisation of placenta, amount of amniotic liquor (normal, polyhydramnion, oligohydramnion), biometrics in mm: biparietal circumference and/or head circumference, abdomen across or abdomen circumference. The physician has to tick off boxes (No/Yes), deciding on whether: the biometrics correspond to the week of pregnancy, any irregularities of the fetus exist, there is any requirement of monitoring or further examinations have been arranged. The pregnant woman should in addition be informed about organ screening.

25th to 28th week

Gynaecological examination (same structure as before end of 16th week)

Laboratory test

The second laboratory examination involves the tests stated below:

- HBs Antigen (Hepatitis)
- Erythrocytes count (units) or haematocrit (%)
- Haemoglobin: g/dl
- oGTT measurement (75g glucose) mg/dl

Additional tests which are only to be undertaken if required:

- Indirect Coombs test
- Toxoplasmosis follow-up test

30th to 34th week

Gynaecological examination (same structure as before end of 16th week)

Ultrasound examination

The ultrasound examination more or less follows the structure of the examination undertaken between the 18th and the 22nd week of pregnancy. Instead of the number of fetuses being counted, the position of the child is recorded and no information on organ screening is given.

35th to 38th week

Gynaecological examination only (same structure as before end of 16th week)

Throughout the pregnancy, any special examinations concerning prenatal diagnostics, such as genetic testing, measurement of the nuchal fold, Doppler ultrasound, echocardiogram or invasive examinations (e.g. amniocentesis, punctation of the placenta, etc.) are ordered by the attending doctor (gynaecologist or GP) and usually performed in hospital or centres for prenatal diagnostics. In order to bill these services a certain indication has to be stated on the referral note.

2.6.3 Optional examinations in the mother-child-pass examination programme and additional examinations

Optional examinations of the mother-child-pass examination programme and benefits provided by contract physicians in addition to those quoted in the mother-child pass are billed based on tariffs of the curative reimbursement catalogues of the social health insurance funds. Social health insurance funds have descriptions in their tariff catalogues detailing under which circumstances the contract physician is allowed to bill the service (e.g. existence of a defined indication: symptoms, age of the pregnant woman, etc.).

Because services billed according to the curative reimbursement catalogue are not coded specifically when they are provided as mother-child-pass services, additional services which are not part of the mother-child-pass examination programme, cannot be identified. They are not considered within the calculation of refunds individual health insurance funds receive from the means of the FLAF. In summary, benefits which are provided by physicians as maternity benefits are not billed as such but as curative services and are therefore paid for entirely by social insurance instead of being partly compensated through the FLAF.

A small group of Austrian gynaecologists was asked to state any examinations listed as optional examinations/tests in the mother-child pass (2008 edition) which were regularly conducted by them. Possible choices given were: Anti-D-prophylaxis 28th week of pregnancy, length or femur (first and/or second ultrasound examination, 18th-22nd week/30th-34th week of pregnancy), HIV (laboratory tests 25-28th week of pregnancy), oral glucose intolerance test (oGGT, 75g glucose mg/dl) (laboratory test 25-28th week of pregnancy), β -haemolytic streptococci (laboratory tests 25th-28th week of pregnancy), others such as (respondents were asked to list others).⁷⁵

Anti-D prophylaxis, femur length and β -haemolytic streptococci received most responses; the majority of the interviewed gynaecologists also undertook oGGTs. Most examinations or tests which are stated as “optional” in the mother-child-pass seem to be conducted on a regular basis, the only exception being the test for HIV. Regional variations may however exist. Based on a social insurance representative, most pregnant women in Vienna appear to be tested for HIV.

Other examinations stated were: measurement of the nuchal fold (if requested), measurement of cervix length at the 3rd gynaecological examination and in addition, if risks related to the anamnesis or the progression of the pregnancy occur, oGTT (same conditions as length of cervix), β -haemolytic streptococci at 5th gynaecological examination and CTG (cardiotocograph) at 5th gynaecological examination.

Most examinations or tests which were stated as “optional” in the mother-child-pass (2008 edition) seemed to be conducted on a regular basis, the only exception being the test for HIV.

In the 2009 edition of the mother-child-pass booklet a change in the documentation was undertaken, thereby changing the status of previously “optional” tests. The following laboratory tests could then

⁷⁵ The HIV test and the oGTT test were formally included (non-optional) in the mother-child-pass examination programme as of 1 January 2010 but were, at the time of the survey, still declared as optional tests.

only be provided based on a medical indication: before the 16th week of pregnancy: RH-antibody-search test and Anti-D-prophylaxis, between the 25th and 28th week of pregnancy: testing for B streptococcus, testing for HIV and testing for oGTT). By means of the 2009 amendment of the Mother-Child-Pass Directive (December 2009), the HIV test and the oGTT test were included as compulsory examinations in the examination programme (as part of the first respectively third examination).

2.6.4 Execution of the mother-child-pass examination programme in practice

The structure of examinations described in section 2.6.1 represents the structure of examinations as listed in the mother-child pass (2009 edition). In order to find out whether health professionals actually followed these in practice, selected health professionals (gynaecologists and midwives) contacted during the study were asked to state whether the programme reflected the actually performed care provided to pregnant women in Austria. Experts were questioned before the 2009 amendment of the Mother-Child-Pass Directive, meaning that their responses are based on the 2008 version of the mother-child-pass examination booklet.

Gynaecologists in practices appear to be more convinced that the mother-child-pass examination programme reflects the actual care provided to pregnant women in Austria. Gynaecologists and midwives working in hospital are less satisfied with the mother-child-pass examination programme.

One gynaecologist interviewed stated that since screening has been started more than 30 years ago barely any development has taken place and that the mother-child pass reflects, in comparison with today's standards, sub-standard care.

Midwives criticise that they are not part of the examination programme. They believe that their profession could (compared to gynaecologists) provide different/complementary information and that women would be more open with them than with doctors. One gynaecologist stated that the new version of the mother-child-pass is better structured, especially with regard to documentation of the anamnesis.

Health professionals were also asked to list any preventative examinations they provided on a regular basis even though these were not part of the mother-child-pass examination programme. Especially additional ultrasound examinations appear to be undertaken regularly, often without indication but upon request of the mother. Examinations/tests conducted regularly with an indication present are Doppler sonography and the combined test. Other tests which also seem to be executed on a regular basis are fetal echos, oGGT tests and organ screening. More details can be found in Annex 1.

2.7 Action in the case of negative findings

In case the health care provider encounters any negative findings during the mother-child-pass examinations (e.g. risk of preterm birth or of miscarriage), he or she is asked to take further action. This may involve a referral to another specialist, for clarification, or the referral to a hospital for a specific test or procedure. The physician may advise the mother to take special care by taking things easy and avoiding certain activities, he or she may also recommend her to enter maternity leave early in order to not endanger her own life or that of the baby. In the most extreme scenario, the physician or the hospital physicians order the mother to stay at home or in hospital, usually lying down. As a consequence monitoring of the mother and child is increased (additional checks). For further details see also section 1.6 of the report.

Several pregnancy-related guidelines have either been developed in Austria or international guidelines have been adapted to the Austrian circumstances. These can be found in section 1.7 or in more detail in Annex 3.

2.8 Acceptance and adherence

2.8.1. Attitude towards the mother-child-pass examination programme

Among mothers

The mother-child-pass examination programme seems to be well accepted by Austrian women. This assumption can be made based on fairly high attendance rates (for further details see section 2.8.2) as well as other benefits perceived by the women utilising the services. In 1999 various women were, as part of a research study by Pass, interviewed on different aspects of maternity care and thereby also on the mother-child-pass examination programme. All women responded that attending mother-child-pass examinations gave them a feeling of safety and that they were informed in time whether the child was healthy or not. They perceived the preventative character of the mother-child-pass examinations in a positive way and judged the compilation of examinations of the mother-child-pass examination programme to be sensible. In addition to the interviews mentioned above, Pass undertook a survey among about 3,000 mothers insured with the regional sickness fund of Upper Austria in 1999. Responding to the survey, 85% of the women confirmed the importance of prevention exercised through the mother-child-pass examination programme (85% considered the examinations to be “very important”, 14% considered them “important”). Results of the study indicated that acceptance and attendance may be linked to financial incentives, meaning participation rates are higher if attendance is linked to or rewarded by financial incentives.⁷⁶

Among health professionals

In the course of the study a small group of health professionals were interviewed and asked about their perception of the mother-child-pass examination programme. They were asked how good they believed the mother-child-pass examination programme to be.

Responses of the consulted health professionals were diverse but the category “good” (in comparison to “very good”, “satisfactory” and “sufficient”) received the most votes (half of the gynaecologists, close to half of the midwives). Midwives seem to be, in general, less satisfied with the examination programme (about half stated that the programme was, from their point of view satisfactory). This is probably also due to the fact that the mother-child-pass examination programme is solely focussed on physicians and does not involve midwives or other health service providers. Gynaecologists in practices appear to be more satisfied with the mother-child-pass examination programme than physicians in hospitals.

Health professionals were furthermore asked whether the programme, in their opinion, reflected current state of the art research and whether it was up to date.

The majority of the respondents believe that the mother-child-pass examination programme reflects current state of the art research and is up to date. Half of the midwives do however not agree with this statement and also one of four gynaecologists does not agree. Gynaecologists and midwives working in hospital are more likely to belong to the latter group. Again, one main criticism from the midwives is that they do not consider it state of the art to exclude them from the national prevention programme for pregnant women and their children.

Health professionals were asked whether the mother-child-pass examination programme could be improved. Nearly all health professionals responded that the mother-child-pass examination programme could be improved to a certain degree. Close to half of the midwives responded that the programme could be improved strongly, close to half that improvement could be somewhat. Gynaecologists seemed to be more satisfied, more than half of them responded that improvement could be somewhat. The neonatologist believed that it could be improved marginally. Further details on suggested improvements can be found in Annex 1.

2.8.2 Attendance at mother-child-pass examinations

When looking at participation rates in mother-child-pass examinations it is important to distinguish between the examinations for which participation is required in order to receive the entire child benefit

⁷⁶ Claudia Pass (2001). Utilisation of the mother-child pass. An example of the interaction between social status and health? Schriftenreihe Gesundheitswissenschaften volume 19. Linz 2001

and the examinations for which participation is not linked to any financial incentives. Participation in all antenatal examinations, apart from ultrasound examinations, is required for the receipt of the full child benefit. Certain exceptions may apply in case the mother does not confirm participation at her social health insurance fund (e.g. late detection of pregnancy).

Social insurance funds record the number of mother-child-pass examinations (special mother-child-pass tariff positions) billed by their contract partners as well as the expenses for these. Data is reported to the Hauptverband. When comparing the number of examinations with the number of deliveries (live births) of the respective year, participation rates can be estimated.

Table 13: Statistics documenting the mother-child-pass benefits provided by contract- providers and own institutions of social health insurance funds in 2008

Special mother-child-pass tariff position	Examinations	Tariffs in €	Expenses in €
Total pregnancy examinations	380,883	-	6,972,113
MU1: First gynaecological examination	53,719	18.02	968,016
MU2: Second gynaecological examination	50,050	18.02	901,901
MU3: Third gynaecological examination	48,583	18.02	875,466
MU4: Fourth gynaecological examination	48,622	18.02	876,168
MU5: Fifth gynaecological examination	46,758	18.02	842,579
MI1: Internal examination	37,761	11.55	436,140
MS1: First ultrasound examination	47,811	21.72*	1,038,777
MS2: Second ultrasound examination	47,579	21.72*	1,033,066

Source: Hauptverband, * No national tariff, but calculated average tariff

Social health insurance funds, respectively the Hauptverband, record/s only examinations provided by contract providers and in social health insurance institutions (ambulatory clinics); mother-child-pass examinations of women who consult private providers are not included in their statistics. Therefore participation rates calculated by dividing the number of examinations by the number of live births will, if they are based on social insurance data only, always underestimate participation rates.

Table 14: Participation rates – Estimates

	2002	2003	2004	2005	2006	2007	2008
Live births	78.399	76.944	78.968	78.190	77.914	76.250	76.250
Examinations							
MU1	64,482	58,135	58,036	55,864	55,378	54,419	53,719
MU2	54,045	53,511	53,375	52,161	51,473	50,793	50,050
MU3	52,222	51,793	51,592	50,552	49,672	48,718	48,583
MU4	52,295	51,452	51,236	50,349	49,555	48,520	48,622
MU5	49,555	48,754	48,937	47,953	47,542	46,073	46,758
MI1	38,990	38,082	38,751	37,997	37,927	38,059	37,761
MS1	52,248	50,700	50,177	49,264	48,516	48,049	47,811
MS2	50,178	49,841	49,809	49,045	48,207	47,154	47,579

Table 14 continued

Number of mother-child-pass examinations as % of live births in %							
	2002	2003	2004	2005	2006	2007	2008
MU1	82.25	75.55	73.49	71.45	71.08	71.37	70.45
MU2	68.94	69.55	67.59	66.71	66.06	66.61	65.64
MU3	66.61	67.31	65.33	64.65	63.75	63.89	63.72
MU4	66.70	66.87	64.88	64.39	63.60	63.63	63.77
MU5	63.21	63.36	61.97	61.33	61.02	60.42	61.32
MI1	49.73	49.49	49.07	48.60	48.68	49.91	49.52
MS1	66.64	65.89	63.54	63.01	62.27	63.02	62.70
MS2	64.00	64.78	63.07	62.73	61.87	61.84	62.40

Source: Hauptverband der österreichischen Sozialversicherungsträger, Statistik Austria
Abbreviations of examinations: see previous table

Data shown in the table above indicate that participation rates, especially for gynaecological exams are all situated above 60%. This may appear high but increasing participation ought to still be made a top priority. Participation rates drop over time (i.e. they are higher for the first than for the fifth examination) and are considerably lower for examinations of internal medicine (below 50%). Ultrasound examinations are undertaken by close to 2/3 of all women. Participation rates are high even though ultrasound examinations are not required for the full receipt of the child benefit. This is most likely related to the fact that ultrasound examinations are undertaken together with one of the required gynaecological examinations. Time trends (2002-2008) suggest that participation in all examinations has dropped over time even though a slight increase in participation is visible since 2007. The estimated participation rates given in the table above are only approximations and most likely underreport actual participation rates for the before stated reasons.

Reporting by social health insurance respectively the Hauptverband has only been conducted in the above mentioned form since 2002. Previously reports and analyses were generated based on the physician cost statistics (*Ärztelkostenstatistik*) instead of the maternity statistics. At that time mother-child-pass tariff positions were not classified as individual positions and could therefore not be compared among insurance funds.

For individual health insurance funds it should be possible to trace the examinations (examinations path) followed by a selected individual woman or child, using the individual's social insurance number as an identifying factor.

In the region of Styria a yearly evaluation of participation rates in mother-child pass examinations is undertaken. The 2005 report states that mother-child-pass examination rates experienced a significant drop following the reduction of the mother-child bonus in 1996 (see next section). As a consequence various measures were taken such as the introduction of an information service reminding mothers of important preventative examinations for their children and the commissioning of a yearly evaluation of participation rates in mother-child-pass examinations (examinations during pregnancy and child-examinations). Prenatal examinations are only integrated into the invitation system to a minor extent. Evaluation focuses on participation in child examinations, the five prenatal examinations are grouped together into one position. Results show that participation in prenatal examinations has dropped by about 10% between 1996 and 2004/2005, from 72.5% to 64.9%. Authors locate a large potential for the information service in connection with prenatal examinations by arguing that reductions in participation rates were more pronounced for these than for any of the child-examinations.⁷⁷ Personal reminders are also used for some mother-child-pass examinations in the region of Vorarlberg.⁷⁸

⁷⁷ Wissenschaftliche Akademie für Vorsorgemedizin (2005). Yearly Report 2005, Evaluation Mother-Child Pass. Graz. 2005.

⁷⁸ Parliamentary enquiry 29.01.07 regarding preventative care for child, accessed at http://64.233.183.132/search?q=cache:rmbQpOxXNnQJ:suche.vorarlberg.at/vlr/vlr_gov.nsf/0/1DBBE3DA241C6710C125737E0030C647/%24FILE/29.01.251.pdf+aks+teilnahme+mutter-kind-pass+untersuchungen&hl=de&ct=clnk&cd=1&gl=at&client=firefox-a on 1 December 2008

All regions in Austria, except Lower Austria, provide women with vaccination vouchers which enable them to receive basic vaccinations for their child free of charge. When receiving or using the vaccination vouchers women are reminded of participating in mother-child-pass examinations.⁷⁹

Evolution of financial incentives

Findings indicate that participation of mothers in the mother-child-pass examination programme is influenced by financial incentives. Previously the attendance at all stipulated examinations led to the mother receiving the birth subsidy⁸⁰ (*Geburtenbeihilfe*). In 1996 the subsidy was cancelled which, according to data of the Hauptverband, resulted in a decrease in attendance rates of 19% between 1995 and 2000 whilst births dropped by only 11%.

In 1997 the mother-child bonus was introduced⁸¹, a one-time payment of €145.45 (Shillings 2,000) which was consecutively abolished again for births beginning with 1 January 2002 following the introduction of the child benefit⁸². In order to continue receiving the full child benefit, the mother is obliged to confirm that she has undergone all the stipulated examinations (five during pregnancy and five of the child) before the 18th postnatal month. If the confirmation is not provided, the child benefit is reduced to half the amount beginning with the 21st postnatal month.⁸³ Between 1997 and 1998 participation in examinations dropped by 3.6%⁸⁴.

It is very difficult to assess whether the change to the new system of linking the child benefit to the attendance of mother-child-pass examinations has provoked any changes in participation rates because

⁷⁹ Telephone enquiry, regional government of Upper Austria, health department on 2 December 2008

⁸⁰ The birth subsidy and special payments amounted to 15,000 shillings, the equivalent of €1,090.

In order to receive the payment all examinations during pregnancy and until the 4th birthday of the child had to be undertaken. Reference: Health report of Vienna 1997, chapter 3 on health behaviour, accessed at <http://www.magwien.gv.at/who/gb/97/pdf/3-1.pdf> on 19 January 2009

⁸¹ In order to receive the payment all examinations during pregnancy and until the 1st birthday of the child had to be undertaken. Reference: Health report of Vienna 1997, chapter 3 on health behaviour, accessed at <http://www.magwien.gv.at/who/gb/97/pdf/3-1.pdf> on 19 January 2009

⁸² Originally, when it was introduced in 2002, the child benefit amounted to €14.53 per day and €7.27 from the 25th month of the child's life in case the execution of the required mother-child-pass examinations could not be proven by the parents. The child benefit was initially always granted for 30 or 36 months (30/30+6) depending on whether it was claimed by one parent only or by both parents (alternatively/consecutively). If both parents shared the responsibility of looking after their child, the entitlement period can be up to 6 months longer. Mother and father can switch receiving the child benefit twice during their entitlement period whereby the minimum period of entitlement is three months. For multiple births the child benefit is increased by 50% per child (total of 150% for twins, etc.). Another requirement for receiving the full child benefit is that the yearly income of the recipient does not surpass a defined amount.

In 2007 the child benefit regulations (Child Benefit Act) were amended and two additional models were introduced. Since then the recipient (mother/father) can also choose shorter entitlement periods (15/15+3 or 20/20+4 months) and thus receive higher daily payments (. €26.6/€13.3 vs. €20.8/€10.4). The other regulations (switching, multiple births) remained the same.

Certain parents (e.g. single parents, married parents with a yearly income below a certain threshold and defined other individuals) are entitled to claim an additional child benefit which amounts to €6.06 per day. The additional child benefit has to be paid back within a defined period of time.

Reference: Child Benefit Act (*Kinderbetreuungsgeldgesetz*, KBGG) accessed 19 January 2009

In 2009 two additional models were introduced, one which envisions the payment of a monthly child benefit of €1000 for 12+2 months and another which involves the payment of an income-dependent child benefit (80% of last net income, minimum of €1,000 and maximum of €2,000) for 12+2 months. Regulations concerning the child benefit for single parents, the amount of additional income parents who claim the benefit can earn and the additional child benefits for further children were also changed: single parents can claim the benefit for a longer period of time, the threshold for the additional income which can be earned next to claiming the child benefit was partially increased and the benefit for further children was raised. The two new models can be chosen for babies born after 30 September 2009. For further details (in German) see

<http://www.frauen.bka.gv.at/DocView.axd?CobId=36711> and

<http://www.frauen.bka.gv.at/site/6809/default.aspx>, Accessed 10 October 2009

⁸³ Federal Chancellery of the Republic of Austria, mother-child-pass, accessed at

http://www.frauenratgeberin.at/cms/frauenratgeberin/stichwort_thema.htm?doc=CMS1101238010162 on 14 November 2008

⁸⁴ Taking account of the reduced number of births

of the changes undertaken in recording the billing data before and after 2002 mentioned earlier on in this section (documentation through physician cost statistics vs. through mother-child-pass statistics).

Waldhoer et al. argued that “participation in the mother-and-child-pass examination programme may be used as a further indicator of medical access. They stated that the mother-child-pass examination programme enjoyed a participation level of more than 95% before 1996 because it was linked to a government payment of about €1,090.” The authors used aggregated data from the micro-census of 1999 to calculate and plot attendance rates per district. The corresponding map showed a random uniform regional distribution of attendance rates with no deviations from the average Austrian rate. Waldhoer et al. therefore concluded that bias due to differential medical access was unlikely.⁸⁵

Pass stated in her study that before 1996 participation in mother-child-pass examinations was assumed to be situated between 98 and 100%. As a result of a re-evaluation of the data for 1987-1996, which was undertaken by the central Statistics Authority, the Hauptverband and the Ministry of Family, participation rates were identified as deviating between 67 and 90%.⁸⁶

In Upper Austria mothers receive an additional bonus of €370⁸⁷ from the region of Upper Austria if they undertake all mother-child-pass examinations and certain vaccinations (four sextuple vaccinations and two MMR vaccinations).⁸⁸ The bonus was introduced in 2000, because participation rates in mother-child-pass examinations and vaccinations had decreased in the past, and was paid to mothers meeting all requirements the first time in 2002.⁸⁹ The number of claims has increased over time. Such a bonus only exists in Upper Austria.

In a survey conducted by Pass in 1999 among about 3,000 mothers insured with the regional sickness fund of Upper Austria, more than 90% of the responding women stated that they participated in various examinations of the mother-child pass. Participation in the internal examination was lowest (90%) and participation in the first ultrasound examination highest (97%). Participation rates for gynaecological examinations and ultrasound examinations decreased slightly over time.⁹⁰

Responses to the survey also showed that primipara women had a slightly higher probability of attending the examinations undertaken during pregnancy than women who already had children. In addition Pass’s results indicated that women with a medium or high level of education attended more examinations during pregnancy; the same applied to self-employed and employed mothers in comparison to manual workers and not working mothers. Participation in the internal examination was significantly lower than that in gynaecological examinations. Results of the survey further give the impression that women living in larger cities are more likely to attend examinations during pregnancy than women in smaller cities (96-100% participation vs. 92-96%).

2.8.3 Reasons for not attending mother-child-pass examinations

According to a representative of the Federal Ministry of Health, about 70% of the mothers attend the first and about 60% attend the last mother-child-pass examination.⁹¹ Exact data or further information on the share of women not undertaking mother-child-pass examinations are not available at the Ministry of Health or the Hauptverband. This is also due to the fact that it is currently not possible to link various data sets (physicians, social insurance, hospitals) or to forward person data from the individual sickness funds to other health authorities. Person data are available on the level of the individual sickness funds. Findings described in the previous sections confirm that a reduction of the financial incentive (mother-child bonus, linking it to child-benefit) resulted in lower attendance rates.

⁸⁵ Waldhoer, T., Haidinger, G., Wald, M., Heinzl, H. (2006). 'Non-random geographical distribution of infant mortality in Austria 1984-2002.' *Wiener Klinische Wochenschrift* 118/11-12, pp. 341-347

⁸⁶ Claudia Pass (2001). *Utilisation of the mother-child pass. An example of the interaction between social status and health?* Schriftenreihe Gesundheitswissenschaften volume 19. Linz 2001

⁸⁷ €185 at the age of 2 years, €185 at the age of 5 years

⁸⁸ Expert interview, 23 October 2008

⁸⁹ Telephone enquiry, regional government of Upper Austria, health department on 2 December 2008

⁹⁰ Claudia Pass (2001). *Utilisation of the mother-child pass. An example of the interaction between social status and health?* Schriftenreihe Gesundheitswissenschaften volume 19. Linz 2001

⁹¹ Expert interview, 23 October 2008

The representative of the Ministry of Health assumes that financial incentives, specifically the lack of incentives, exert a significant influence on the participation rates for mother-child-pass examinations.⁹²

Health professionals who were consulted in the course of the study were asked to list potential reasons for women not attending mother-child-pass examinations. Responses are listed below, more information on the survey results can be found in Annex 1.

Table 15: Potential reasons for mothers not attending mother-child-pass examinations

Gynaecologists	<ul style="list-style-type: none"> - Lack of awareness and understanding, lack of knowledge, ignorance - Late detection of pregnancy (e.g. migrants) - Insufficient information on benefit of examinations - Individual reservations of ultrasound examinations - Lacking command of language - Lack of time
Midwives	<ul style="list-style-type: none"> - Questioning point of examinations and screening - Ignoring the pregnancy, existence of severe social problems - Lack of understanding and resources, language problems - No relationship to the child (unwanted pregnancy) - Late detection of pregnancy - Depression - Lack of prioritisation (illness will not affect my baby) - Fear and uncertainty of examination/examination results
Neonatologist	<ul style="list-style-type: none"> - Individual reasons - Lack of awareness

Source: Consultation of selected Austrian health professionals, October/November 2008

The following reasons potentially preventing women from accessing mother-child-pass examinations were mentioned by more than one professional group:

- Lack of understanding, awareness and resources
- Insufficient information on benefit of examinations
- Language problems
- Late detection of pregnancy

About 10 years ago the introduction of a recall system⁹³ was discussed in the region of Styria. In preparation for this, a survey was conducted by the Scientific Academy for Preventative Medicine (*Wissenschaftlichen Akademie für Vorsorgemedizin*) with the aim of finding out why women did not attend mother-child-pass examinations. Results of the study are not available to the public but confidential. They showed that about 96% of the responding women attended examinations. However about 34% of the women stated that examinations were burdensome, 84% complained about long waiting times, 51% that doctors prescribed medicines too quickly, 48% that physicians reserved too

⁹² Expert interview, 23 October 2008

⁹³ According to a representative from the Scientific Academy for Preventative Medicine (Telephone conversation of 20 January 2009) a reminder service was introduced in 1998 in Styria. Initially women were reminded to attend mother-child-pass examinations. After two years the reminder service was newly defined as information service. The information service is more comprehensive. Women receive letters every fortnight which not only remind them to attend upcoming examinations within a recommended time interval (based on the mother-child-pass directive) but also provide them with information on why the examination is important and what exactly will happen at the examination. The call-recall system starts with the birth of the child, antenatal examinations are not covered even though the Academy recommends to include antenatal examinations as well (see yearly report of the Academy for 2007 which can be accessed at http://www.gesunde-kinder.at/kinder-impfen/download/aka_jb_2007_web.pdf). According to a representative of AVOS, the Working Group for Preventative Medicine in Salzburg, women receive some information on mother-child-pass examinations with the vaccination voucher brochure which is sent to them after the birth of their child. Based on the date of birth recommended intervals for undertaking certain examinations are calculated and communicated to the mother. In addition she receives a letter to remind her of examinations after the second birthday of the child (Telephone conversation of 21 January 2009). Both representatives were not aware of other recall or information services in other Austrian regions.

little time for them, and 19% that they felt badly treated. Examinations at the beginning of the programme seem to be attended more frequently than those offered at a later point in time.⁹⁴

In 1999 Pass conducted 14 qualitative interviews as well as a survey among 3,000 women receiving maternity benefits. All questioned women lived in Upper Austria and were insured with the regional sickness fund of Upper Austria. In her analyses Pass examined, among other aspects, whether certain factors exerted an influence on the participation in the examinations of the mother-child-pass examination programme. Women interviewed by Pass in qualitative interviews believed that reduced financial incentives would be followed by lower participation rates. They argued that financial incentives provided an additional motivating factor and also reduced the perception of the mothers of the examinations being burdensome. The introduction of a recall-system was not believed to be a suitable substitute for financial incentives.

Women responding to the survey who were questioned about their participation in future mother-child-pass examinations nearly all stated that they intended to undertake all examinations (87% said that will definitely undertake all examinations, 9% that they will presumably undertake the examinations and about 2% stated that they will not participate in all examinations). The following reasons were quoted in connection with not accessing any of the examinations: low benefit of examination, long waiting times at physician practice, dissatisfaction with a reduction of the financial benefit. Other reasons quoted were: lavishness of examinations, lack of time, low trust in physicians, frequent physician visits, impersonal treatment by physicians, bad experiences, overlooking appointments and no adequate care for siblings. 88% of the responding women believed that the change in the legal regulations (reduction of the benefit received when undertaking all examinations) would have negative consequences on the participation rates (40% thought that “considerably less women attending” vs. 48% “less women attending”). 9% believed that the legal change did not provoke changes in participation. 80% thought that participation in examinations would increase if the mother-child-bonus were increased again. Only 38% believed that targeted information and advertising would result in higher participation rates, 39% were uncertain and 22% denied this.⁹⁵

When the interview women were asked to state the potential motivations of women who did not undertake the preventative examinations the following responses were given: 70% believed that this group of women was interested in financial incentives, 29% that women were indifferent about their child’s health, 20% that they had too little time, 31% that appointments had been overlooked, 44% that they did not think much of preventative examinations, 43% that these women had received too little information, 55% that they had an insufficient concern for health, 23% that they had undergone bad experiences, 41% that they considered waiting times to be too long and 16% treatment to impersonal, 31% that this group of women had nobody to look after their children, 22% had a low income and 45% of these women expressed their dissatisfaction about financial benefits by not attending examinations.

The results of the survey showed a correlation between the level of education and the participation in examinations during pregnancy: the higher the level of education, the higher the probability of attending examinations and the higher the probability of maintaining a high level of participation during the programme.⁹⁶

2.9 Evidence of health outcomes of the mother-child-pass examination programme

2.9.1 Documentation of outcomes

Outcomes of mother-child-pass examinations are documented comprehensively in the mother-child pass. Notes made by doctors in the pass are hand-written. No comprehensive electronic documentation of the mother-child pass exists. Supplementary to the handwritten documentation in the pass, gynaecologists as well as other attending health professionals manage the health records of their individual patients either electronically or paper-based in their own practices. The majority of the Austrian physicians use a computer. Actually all data of the mother-child pass should also be saved in

⁹⁴ Expert interview, 23 October 2008

⁹⁵ Claudia Pass (2001). Utilisation of the mother-child pass. An example of the interaction between social status and health? Schriftenreihe Gesundheitswissenschaften volume 19. Linz 2001

⁹⁶ Ibid

the patient file of the attending physician as the mother-child pass remains with the patient. The physician’s documentation may however be incomplete. Consistent parallel documentation can only be achieved by the physician investing a certain amount of time.

Social health insurance funds collect billing data from their contract partners. Since January 2003 contract doctors and since January 2004 other contract partners are obliged to bill services provided electronically with their insurance fund. Only about 50% of the total expenditures of social health insurance funds for mother-child-pass services are based on comparable services as defined in the general contract on mother-child-pass examinations (special mother-child-services). The remaining half of the expenditures is related to benefits which are billed according to the curative reimbursement catalogues of the individual health insurance funds. These services can, with very few exceptions, not be identified as mother-child-pass services as they are not specifically coded by the contract providers.

Hospitals document the inpatient and outpatient services provided in the hospital statistics and are obliged to regularly report minimum basic data sets of patients to the Ministry of Health. Person-based data is documented by the attending physicians and nurses in the medical file of the patient.

So far no electronic health record spanning all areas and levels of care exists in Austria. The electronic health record (*Elektronische Gesundheitsakte*, ELGA) is currently being developed. The rollout of the electronic health card (e-card) in Austria took place between May and November 2005, ensuring nationwide use by January 2006.

The production of an electronic mother-child pass is being discussed: implementation plans are however met by a variety of obstacles, including:

- data are recorded by different health professionals and institutions i.e. authorities
- linkages between the systems are lacking
- data protection issues make linkages and analyses of person-based data very complicated
- physicians fear to be monitored and controlled
- physicians would most likely demand more money for additional documentation services

2.9.2 Outcomes of the mother-child-pass examinations

The representative of the Ministry of Health stated that no regular evaluation of the mother-child-pass examination programme is undertaken. Procedures involving changes and revisions of the programme do not follow a standardised pattern. Actions are motivated by publications in the professional literature, suggestions of experts or current events. Suggestions are discussed among the members of the mother-child-pass committee. Usually the chair assigns a committee member to perform more research on a defined topic and then present the findings to the other members.⁹⁷

A small group of health professionals (5 gynaecologist, 1 neonatologist and 6 midwives) were asked to list the positive outcomes of the mother-child-pass examination programme for mothers and their children (as perceived by them personally). Their responses are summarised in the table below.

Table 16: Positive outcomes of the mother-child-pass examination programme

For mothers	
Gynaecologists	<ul style="list-style-type: none"> - Reduction of peripartur mortality - High acceptance of regular examinations - Assessment of internal illnesses with increasing age of pregnant woman - Path of steps to follow - Safety
Midwives	<ul style="list-style-type: none"> - Conveying a feeling of safety to the woman - Following the growth and development of the unborn baby - Medical health check ups for an entire population group - Early detection of maternal illnesses and execution of appropriate treatment - Standardised documentation and examinations (good for women who visit midwives) - Good documentation in the situation of change of physician or hospital - Standardised screening - Physical document (mother-child pass)

⁹⁷ Expert interview, 23 October 2008

Table 16 continued

For children	
Gynaecologists	<ul style="list-style-type: none"> - Reduction of premature birth rates and infant death - Better and clearer overview reduces the risk of not undertaking necessary steps (e.g. additional examinations or checks) - Due to regular checks detection of a majority of the child’s problems (e.g. dystrophy, macrosomia, placental insufficiency) - Reduced infant morbidity and mortality - Fewer postpartal transfers (to intensive care units) - Timely transfer of risky pregnancy to specialised centre - More monitoring
Midwives	<ul style="list-style-type: none"> - Reduced morbidity and mortality due to regular examinations - Early detection and therapy of several illnesses - Prior knowledge of risk birth - Standardised documentation and examinations - Continuing monitoring after birth - Timely treatment of irregularities
Neonatologist	<ul style="list-style-type: none"> - Close observation and standardised examinations during the first years of life

Source: Consultation of selected Austrian health professionals, October/November 2008

All groups of health professionals state positive impacts of the mother-child pass for both the mother and the child. The major benefits seem to be:

- reduced morbidity and mortality
- reduced postpartal transfers to specialised units
- earlier detection of irregularities and risks enabling an earlier reaction i.e. initiation of treatment
- clear structure and documentation
- continuity of care: regular examinations and continuous monitoring
- feeling of safety

Not much evidence could be found on medical outcomes of the mother-child-pass examination programme. Relevant publications are listed below.

Walhofer and Vutuc examined changes in infant mortality and identified a “marked decrease in mortality rates produced by the introduction of the mother-child-pass examination programme in 1974”.⁹⁸ In a different publication they stated that the increase in mean birth weight between 1970 and 1995 by 60g could partially be attributable to the mother-child-examination programme.⁹⁹

Fenz argues that perinatal mortality has been reduced by 75% since the introduction of the mother-child-pass examination programme.¹⁰⁰

Pass quotes Puttinger et al. in her publication who report that the number of children infected prenatally with toxoplasmosis could be reduced from 1 in 70 to 1 in 10,000 through introducing toxoplasmosis screening during pregnancy.¹⁰¹

⁹⁸ Waldhofer, T., Vutuc, C. (1995). 'Trend analysis of infant mortality under special consideration of perinatal mortality in Austria.' *Gesundheitswesen* 57 (1), pp. 1-54 in Waldhofer, T., Haidinger, G., Wald, M., Heinzl, H. (2006). 'Non-random geographical distribution of infant mortality in Austria 1984-2002.' *Wiener Klinische Wochenschrift* 118/11-12, pp. 341-347, p. 342

⁹⁹ Waldhör, T., Haidinger, G., Vutuc, C. (1997). 'Development of birth weight in Austria from 1970-1995.' *Wiener Klinische Wochenschrift* 109(20), pp.804-807

¹⁰⁰ Fenz, C. (2007). 'Mother-child-pass: Current strategies.' *Clinicum* 7-8, accessed at <http://www.uro.at/dynasite.cfm?dssid=4171&dsmid=81858&dspaid=641113> on 14 November 2008

¹⁰¹ Puttinger, C. (1998) Screening for Toxoplasmosis during pregnancy in Hohenauer, L., Nagl, F., Vutuc, C. (1998). Morbidity and Mortality of mother and child. Reports and studies of the perinatal working group Upper Austria. Hallein in Claudia Pass (2001). Utilisation of the mother-child pass. An example of the interaction between social status and health? *Schriftenreihe Gesundheitswissenschaften* volume 19. Linz 2001

Trojovský et al. argue that the inclusion of screening for toxoplasmosis in the mother-child-programme resulted in a considerable reduction of newborns being infected with congenital toxoplasmosis.¹⁰²

Findings of Pass indicate that the awareness of women for health-related issues and prevention changes during pregnancy. Changes in behaviour included changes in nutrition, getting more fresh air, quitting smoking and a different attitude in general.¹⁰³ Change was more pronounced among women with a higher level of education. When looking at the income of the women responding there was a tendency of women with a better income being more health conscious.

The study “Development and implementation of a computer-based child-health system” was initially commissioned by the anniversary fund of the Austrian National Bank (between 1994 and 1996) and then continued by the (then) Federal Ministry of Social Security and Generations (*Bundesministerium für Soziale Sicherheit und Generationen*, BMSG) between 1996 and 2002 which commissioned its execution to the department of health system research at the University of Linz in the region of Upper Austria.¹⁰⁴ The BMSG placed the focus on the evaluation of a concept for the mother-child-pass examination programme. The project had the following aims:

- Introduction of a computer-based children’s health system in a small isolated region
- Development and testing of quality standards together with the involved physicians
- Evaluation of the efficiency of the current prevention examinations for children
- Development and testing of a concept for evaluation for the mother-child-pass examination programme

The main target was the complete documentation of the health of children between birth and the end of schooling including data on the birth. The following data was recorded:

- data from the mother-child pass
- data from the school-examination forms
- data from the vaccination pass

The mother-child-pass examination programme is not sufficiently evaluated statistically, especially regional data are missing. The project was piloted in the region of Gmunden in the region of Upper Austria. About 1,500 mother-child passes of mothers in Gmunden were analysed retrospectively. Passes were borrowed from mothers for a day in order to record data from the passes electronically.

Results showed that examinations during pregnancy of the mother-child-pass examination programme were attended by more than 90% of the women. All five examinations are only accessed by close to 2/3 of the women. Internal examinations and laboratory examinations depicted high attendance rates. Between 84 and 94% of the women stated that they attended at least one examination, 61% attended all examinations. Recording of data showed that the completeness of recording was high, about 95-100% of the passes were completely filled out.

2.10 Recent changes and plans for the future

Currently no evaluation of the outcomes of the mother-child-pass examination programme is planned. However, there is discussion towards improving its quality through gynaecological guidelines and regulations. Thereby a defined state of the art should be achieved. Physicians very strongly oppose any regulation. Further improvements could potentially be achieved by offering increased care for high

Fenz, C. (2007). 'Mother-child-pass: Current strategies.' *Clinicum* 7-8, accessed at <http://www.uro.at/dynasite.cfm?dssid=4171&dsmid=81858&dspaid=641113> on 14 November 2008

¹⁰² Trojovský, A., Fast, C., Lercher, A., Pertl, B., Gratzl, R., Vander-Möse, A., Rosegger, H. (2000). 'Congenital toxoplasmosis despite screening – why?' Accessed at <http://www.trojovsky.net/toxo/doc/trotz-screening.htm> on 2 December 2008

¹⁰³ Claudia Pass (2001). Utilisation of the mother-child pass. An example of the interaction between social status and health? *Schriftenreihe Gesundheitswissenschaften* volume 19. Linz 2001

¹⁰⁴ Department of Health system research at the University of Linz, Upper Austria, Development and implementation of a computer-based child-health system, phase IV taking consideration of an evaluation concept for the mother-child-pass. Accessed at http://www.ipg.uni-linz.ac.at/fr_leiste_proj.htm on 13 November 2008

Expert interview, 23 October 2008

risk persons. Execution of such measures could rather be on the regional or local level and not as part of the mother-child-pass examination programme.¹⁰⁵

The BMG listed a new test, namely the RH-antibody-search test¹⁰⁶ and additional optional tests namely the tests for HIV, the screening for β - haemolytic streptococci and the oGTT (75g glucose) mg/dl in the mother-child pass edition of 2008. The intention was, according to a representative of the Ministry of Health, to give physicians the opportunity to document the execution of these tests in case they decided to undertake them. Documentation for all of these new and optional tests was modified in the 2009 edition. They can now only be provided based on a medical indication.

Changes in the 2008 edition were implemented without prior communication with social insurance. Social insurance representatives assume though that these laboratory tests will, as a result, be ordered by most physicians (GPs, gynaecologists) in the future. From the viewpoint of social insurance the inclusion of these positions in the mother-child-pass examination programme means that they also ought also be defined as mother-child-pass tariff positions in order to increase the share of the Family Burdens Equalisation Fund paid to the social health insurance funds. Currently they have to be billed according to tariffs of the curative reimbursement catalogue.

It is however, according to a social insurance representative, also possible that these tests were already undertaken by most of the contract providers anyway but that they, due to them being reimbursed through curative tariffs, were not considered in the FLAF calculation.¹⁰⁷

Based on the amendment of the Mother-Child-Pass Directive in 2008, the oGTT will be included in the mother-child-pass examination (between 25th and 28th week of pregnancy) as of 1 January 2010.

In October 2009 it was still uncertain whether the above detailed changes were effectively going to be implemented, eventhough the corresponding legislation has already been enacted (2008 amendment of the Mother-child-pass directive). Whereas physicians opposed the exclusion of the internal examination, social insurance did not favour the idea of encouraging pregnant women to undertake a periodic health examination, partially because the examination programme is not intended for the target group of pregnant women but for the general population (18 years and older).

In December 2009 another amendment of the Mother-Child-Pass Directive came into effect which cancelled the 2008 Directive and involved the subsequent changes of the mother-child-pass-examination programme from 1 January 2010:

The blood examination taking place before the 16th week of pregnancy should include an HIV test, the examination undertaken between the 25th and the 28th week of pregnancy should include an oGTT test. Both of these tests feature a requirement for the further receipt of the full child-benefit. Furthermore an additional ultrasound examination should be performed between the 8th and 12th week of pregnancy. The ultrasound examination is, like the other ultrasound examinations, not linked to the receipt of the child benefit in any way. The internal (physical) examination remains within the examination programme and the recommendation for women to undertake the periodic health examination is cancelled. Screening for β -haemolytic streptococci is excluded from the examination programme.

General discussions

In a survey conducted among 3,000 women receiving maternity benefits in 1999 by Pass, 68% of the responding women said that they would not change anything about the preventative examinations whilst 21% considered changes necessary.¹⁰⁸

The involvement of midwives in the examination programme is a topic which is constantly being discussed. Since autumn 2007 the training of midwives does not take place at own academies any more but at universities of applied sciences.

¹⁰⁵ Expert interview, 23 October 2008

¹⁰⁶ As part of the laboratory examination to be undertaken before the 16th week of pregnancy

¹⁰⁷ Expert interview, 4 November 2008

¹⁰⁸ Claudia Pass (2001). Utilisation of the mother-child pass. An example of the interaction between social status and health? Schriftenreihe Gesundheitswissenschaften volume 19. Linz 2001

Apparently it is very difficult to change the examinations of the mother-child-pass examination programme as financial resources are very scarce. Usually new tests or examinations can only be included if existing ones are reduced or excluded.¹⁰⁹

In Austria benefit catalogues of social health insurance funds and also the examination programme of the mother-child pass programme tend to be extended by adding new benefits instead of actually revising the entire catalogue. The adding of new services appears to be tolerated more easily whereas the removal of services poses a considerable challenge. For the introduction of new benefits assessments and evidence are increasingly taken into consideration. However hardly any assessments are performed which take a wider view, e.g. looking at the entire scope of a programme (e.g. mother-child pass programme), at complementary or substitutive services or at the potential removal of obsolete or ineffective services.

Specific discussions

Gestational diabetes: In the past the Austrian mother-child-committee demanded the inclusion of the oGTT test between the 24th and the 28th week of pregnancy.¹¹⁰ The test was initially included as an optional laboratory test between the 25th and 28th week of pregnancy in the 2008 version of the mother-child pass. The intention behind this was, as already mentioned before, to give physicians the possibility to document the execution of the test in case they performed it.¹¹¹ As a consequence of the amendment of the Mother-Child-Pass Directive in 2008, the oGGT should be performed as part of the examination taking place between 25th and 28th week of pregnancy as of 1 January 2010. In the 2009 version of the mother-child pass examination programme documentation in the booklet was changed in such a way that this test can now only be undertaken based on medical indication. Following the amendment of the Mother-Child-Pass Directive in December 2009, the oGTT test was formally included in the mother-child-pass examination programme as part of the blood examination between the 25th and 28th week of pregnancy.

Streptococcus: Screening for β -haemolytic streptococci was included as an optional laboratory test between the 25th and 28th week of pregnancy in the 2008 version of the mother-child pass, the intention being the same as with the oGGT (see above). In the 2009 version of the mother-child pass examination programme documentation in the booklet was changed in such a way that this test could only be undertaken based on medical indication. The same changes applied to the oGGT test, the RH-antibody search test, Anti-D prophylaxis and HIV testing. Tests for HIV and oGTT were included in the examination programme as of 1 January 2010 whilst screening for β -haemolytic streptococci was excluded from the examination programme.

The chair of the Austrian mother-child-committee publicly demanded the inclusion of a third ultrasound examination in the mother-child pass, namely in the first trimester, between the 8th and the 12th week of pregnancy. The gynaecologist justified this by the exact definition of the date of birth only being possible through such an examination as well as ensuring a better monitoring and treatment of multiple pregnancies, thereby reducing complication rates. The Hauptverband (department for evidence based medicine) has recently published a review discussing the potential inclusion of this examination in the mother child-pass. Authors concluded that no ultrasound examination should be included in the mother-child pass for the first trimester of pregnancy.¹¹²

¹⁰⁹ Expert interview, 23 October 2008

¹¹⁰ Rux, S. (2007). 'Current strategies in antenatal care.' *Ärzte Woche* 21/44, accessed at <http://www.aerztewoche.at/viewArticleDetails.do;jsessionid=D40382EDFD3236EE0FB4DBEBC57FE846?articleId=6652> on 14 November 2008

¹¹¹ In the 2009 edition of the mother-child pass, which will be published in summer or autumn 2009, the examination will not be included as an optional examination any more.

¹¹² The entire report can be accessed at:

http://www.hauptverband.at/portal/index.html?ctrl:cmd=render&ctrl>window=hvbportal.channel_content.cmsWindow&p_menuid=65859&p_tabid=5&p_pubid=136131

They also reported that ultrasound examinations (in the first trimester) are currently often conducted based on a defined indication.¹¹³

Based on the amendment of the Mother-Child-Pass Directive in 2008, an additional ultrasound examination, which should be performed between the 8th and the 12th week of pregnancy, will be included in the mother-child-pass examination programme as of 1 January 2010. This change was confirmed by the 2009 amendment of the Mother-Child-Pass Directive (December 2009).

The inclusion of screening for infections in the mother-child-pass examination programme is being discussed but still requires, according to a representative of the Federal Ministry of Health, further evidence before its potential implementation.¹¹⁴

Equally, the removal of the internal (physical) examination (17th to 20th week of pregnancy) from the mother-child-pass examination programme has repeatedly been discussed because its benefit is questioned.¹¹⁵ The 2008 amendment of the Mother-Child-Pass Directive states that this examination should be excluded from the examination programme as of 1 July 2010. Instead women ought to be advised to participate in the precautionary health examination (*Vorsorgeuntersuchung*), which is overseen by social health insurance. The 2009 amendment of the Mother-Child-Pass Directive cancelled this intended change; the internal examination remains part of the examination programme as of 1 January 2010.

The Federal Ministry of Health commissioned the Ludwig Boltzmann Institute for Health Technology Assessment to undertake a rapid assessment (within one month time) on international antenatal care practices on 22 April 2009. The institute was specifically asked to provide an overview of international antenatal care examinations and to show whether any evidence existed on the execution of an internal/physical examination of the mother during pregnancy. The report was published in the Internet in May 2009. Authors concluded that an internal examination is not offered in any of the investigated countries, nor is it referred to in the overview reports revised for the rapid assessment. It is unclear as to which additional risk factors or diseases may be detected by the examination which are not anyway detected in the course of a thorough anamnesis or gynaecological examination.

The authors of the assessment confirm that further research is required to evaluate the contribution of the mother-child-pass examination programme with regard to morbidity and mortality of mother and child.¹¹⁶

¹¹³ Wilbacher et al. (2008). 'Diagnostic accuracy and outcomes of ultrasound in the first trimester of pregnancy for detection of complications relevant for Austrian population, exclusive of screening for Down syndrome: a systematic review.' Main Association of Austrian Social Insurance Institutions. Vienna.

¹¹⁴ Rux, S. (2007). 'Current strategies in antenatal care.' *Ärzte Woche* 21/44, accessed at <http://www.aerztewoche.at/viewArticleDetails.do;jsessionid=D40382EDFD3236EE0FB4DBEBC57FE846?articleId=6652> on 14 November 2008

¹¹⁵ Ibid

¹¹⁶ Abuzahra, M. (2009) et al. Mother-Child-Pass. An international comparison of the examinations of pregnant women. Ludwig Boltzmann Institute for Health Technology Assessment. Commissioned by the Federal Ministry of Health. Vienna.

3 Conclusions

It is crucial to keep in mind that maternity care should not be viewed as an isolated topic but that it is closely related to other areas such as family politics, education and the structure of the labour market.

Regarding the initiation of follow-up activities of the present case study, it is advised to take a broader public health view in the development of a health orientated strategy towards maternity care. This is in contrast to the current medical emphasis on health services for pregnant women and their children. The medical focus and limited view of maternity care is partially due to this area largely being restricted to the mother-child-pass examination programme which is outlined in the mother-child-pass booklet and involves medical services only.

The Austrian mother-child-pass examination programme has existed for more than 30 years. To date, no comprehensive evaluation of the programme has been undertaken, only a few isolated and not standardised attempts which have proven to be extremely difficult due to the fact that no complete electronic record exists of the mother-child pass data. Electronic data are scattered among providers (mostly gynaecologists), and mothers are the only ones who guard the complete data in the form of the mother-child pass booklet, which contains hand written comments of the attending physicians.

Funding of preventative care and thus also for the mother-child-pass examination programme is limited.

The examination programme is a physician-focussed screening programme for maternity and child-care. Midwives or other health service providers are not involved even though they have been constantly demanding this in the past.

Examinations included in the mother-child-pass are clearly defined and listed in the pass; their mode of execution is however not described more closely but left to the discretion of the individual provider. This can result in heterogeneity of services provided.

The examination programme listed in the mother-child-pass booklet and the actual examinations undertaken in practice can vary considerably. Several gynaecologists undertake more examinations than listed in the pass, either because they consider these medically justified or because the women requests them (e.g. additional ultrasound examinations). These may sometimes be provided by the gynaecologist free of charge, other times they are billed with social health insurance or paid for privately by the mother.

It is difficult for social health insurance to identify all services undertaken in connection with the mother-child-pass examination programme because only a defined number of tariff positions (21) are specifically named, coded and billed as special maternity services. Other services are billed by the social health insurance funds based on tariffs of their catalogues for curative services.

An increasing number of pregnancies are defined as high risk pregnancies¹¹⁷, involving a higher amount of prenatal diagnostics and medial interventions before birth.

Preterm birth and illnesses of the mother appear to be the major challenges in connection with pregnancy and birth. Termination of pregnancy and infant mortality seem to be of a lower priority.

Information received by pregnant women is only partially standardised. The main sources of information are the complementary booklet of the mother-child-pass and the attending health service providers.

Judging by the attendance rates the examination programme seems to be well fairly accepted by mothers. Attendance at the examinations of the mother-child-pass in general appears to be moderately high (50-70%); however, decreasing over time (with progression of the mother-child-examination programme and increasing age of the child) and strongly linked to financial incentives. Current estimates are based on aggregate data only (national data from the Hauptverband).¹¹⁸ Regional variations of attendance and continuity of care (i.e., how many women follow the entire examination

¹¹⁷ BMGFJ (2005). Austrian Women's Health Report. Vienna. 2005

¹¹⁸ Women who pay for their examinations privately and do not claim a refund from their health insurance fund afterwards do not enter the statistics. This may lead to an underestimation of participation rates.

programme?) can only be assessed based on data from the individual health insurance funds. Upper Austria is the only region having implemented a separate financial incentive for mothers who attend all examinations and certain vaccinations (mother-child bonus). Increasing future participation should be made a top priority.

Little research exists on the outcomes of the mother-child-pass examination programme. According to the studies found in the preparation of this report, it has led to a reduction in infant mortality and to earlier detection, i.e. prevention of risks such as infection of the child with toxoplasmosis. The identification of potential risks at an earlier stage enables the earlier initiation of appropriate treatment. Health professionals interviewed in the course of the study also believe that the mother-child-pass examination programmes conveys a feeling of safety to the woman and reassembles a structured and clear approach towards required examinations and documentation of these. Continuity of care is promoted through continuous monitoring. Another potential benefit may be the achievement of sustainable changes in the health awareness and behaviour of women participating in the programme.

Revisions of the mother-child-pass examination programme do not follow a standardised procedure and lack transparency. The responsibility for revisions and updating of the mother-child pass rests with the mother-child-pass committee, a sub committee of the Supreme Sanitary Council. Since the existence of the examination programme not many changes have been undertaken; several examinations have been added and the layout of the mother-child-pass improved.

However, the complementary booklet, which includes a wide range of pregnancy and birth related information, has been updated regularly. Revisions of the examination programme seem to be based on expert opinion rather than on scientific evidence. Outcomes of negotiations with physicians also seem to play an important role in this context. Activities of the Supreme Sanitary Council and its sub-committees are not transparent to the public, protocols are confidential; they act as advisory boards to the Ministry of Health and barely any information on their activities is made public.

Changes in the mother-child-pass examination programme are not communicated to social health insurance or health service providers in a standardised way. The updates of the 2008 edition were not communicated with social health insurance in advance. Some health providers were not aware of the new 2008 edition when asked about it in October/November 2008.

Appendices 1-4: See separate Appendix document

CHAPTER II: INTERNATIONAL EVIDENCE

1. Introduction

This report presents a multi-perspective case study which aims to highlight antenatal care practice in a group of selected country settings. The aim is to provide extensive examples of evidence-based guidelines in the countries of study, which are intended to serve as a reference point when analysing the antenatal care component of the Austrian Muki-Pass, and also as a basis for providing recommendations.

Chapter II provides details of the relevant data sources from selected countries. The seven settings selected include: the United Kingdom (UK), Germany, Switzerland, Canada, Australia, Sweden (in part) and the American Kaiser Permanente¹¹⁹ health maintenance organization (HMO). A full list of references can be found at the end of this Chapter in Section 6. The information collected from these sources will be used to facilitate a comparative best practice approach to antenatal care.

This Chapter is focused on the antenatal care delivered to nulliparous women with no associated medical conditions during pregnancy. Two aspects of antenatal care, in particular, are examined.

First, Section 3 identifies the advice given to pregnant women in the settings of the particular countries. This includes fifteen relevant topic areas with regard to lifestyle behaviours that may need to be changed in pregnancy, including: diet, nutritional supplementation, alcohol, smoking and drugs, physical activity, travel, medicines, dental health, work, and others.

Second, Section 4 presents specific clinical practice guidelines on the various kinds of medical interventions undertaken by the relevant health professionals during pregnancy. Further attention is given to the frequency of consultation and the appropriateness of care. Consultations assessed include: the initial antenatal care consultation, routine care, follow-up examinations and subsequent visits, ultrasound examinations, and screening.

Section 5 of the present Chapter focuses on antenatal care interventions which are considered to be not effective in terms of health outcomes or not cost-effective. Therefore, the examinations and guidelines discussed in this section are not recommended for implementation.

In the Appendix of Chapter II, six tables have been included which aim at directly comparing the antenatal care in the selected country settings, and can serve as a summary of the findings presented throughout the report.

2. Information sources

The clinical guideline “Antenatal care – routine care for the healthy pregnant woman” served as the information source for advice and clinical practice in the UK. This comprehensive guideline was developed by the National Collaborating Centre for Women’s and Children’s Health and commissioned by the National Institute for Health and Clinical Excellence (NICE). Besides the National Collaborating Centre for Women’s and Children’s Health various other groups, such as medical and professional associations, health professionals and service users (patients) played a role in compiling the antenatal care guidelines. Recommendations found in the guideline are explicitly evidence-based, given for example on the basis of clinical effectiveness, while cost-effectiveness components are also taken into consideration for the majority of described interventions. The guideline was initially issued in 2003 and most recently updated in 2008 by a group consisting both of professionals and laymen¹²⁰.

Information on the advice given to pregnant women in Germany was obtained from the brochure “All around pregnancy and birth”, published by the German Federal Centre for Health Education

¹¹⁹ Kaiser Permanente is America’s largest not-for-profit health plan, serving 8.7 million members with an operative revenue of US\$37.8 billion (2007) with headquarters in Oakland, California

¹²⁰ National Collaborating Centre for Women’s and Children’s Health 2008

(*Bundeszentrale für gesundheitliche Aufklärung*) and created with professional support from the German Association for Psychosomatic Gynaecology and Obstetrics. The brochure was published in June 2006¹²¹ and most recently reviewed in October 2006.

The section describing clinical antenatal practice in Germany draws on information found in the “Motherhood guidelines” published by the Federal Joint Committee (*Gemeinsamer Bundesausschuss*), the paramount decision-making body of health providers and sickness funds¹²². The guidelines have been created with assistance and comments from the German Union of Freelance Midwives and the German Union of Midwives¹²³. The “Motherhood guidelines” were initially issued in 1985 and since then continuously reviewed. The latest version dates from March 2008¹²⁴.

Complimentary recommendations were obtained from the list of “Recommendations for perinatal care through midwives” issued by the German Union of Midwives. These recommendations do not form a strict guideline, but provide useful practical information for daily obstetric and gynaecological care delivered by midwives. The recommendations were developed by professional midwives in 2004. A review was scheduled for 2005¹²⁵.

Literature and material for Canada include: “The Sensible Guide to a Healthy Pregnancy” published by the Public Health Agency of Canada¹²⁶, and “National Guidelines on Family-Centred Maternity and Newborn Care” by the Minister of Public Works and Government Services. The Canadian “Family-Centred Maternity and Newborn Care: National Guidelines” were developed by a team of 70 health professionals and facilitated in collaboration with Health Canada and the Canadian Institute for Child Health. Moreover, the guidelines were designed in collaboration with various Canadian health professionals associations, such as the Canadian Medical Association or the Canadian Confederation of Midwives. The Canadian Family-Centred Maternity and Newborn Care: National Guidelines were published in 2000 and were regularly reviewed and edited. While the information from the Sensible Guide to a Healthy Pregnancy and the Family-Centred Maternity and Newborn Care: National Guidelines were used for describing the advice given to pregnant women, the Family-Centred Maternity and Newborn Care: National Guidelines carried additional information for clinical guidelines for antenatal care in Canada¹²⁷.

Information on advice as well as clinical guidelines for the case of Kaiser Permanente (United States) was obtained using the nine volumes of the Healthy Beginnings prenatal newsletters. These have a primarily patient-centred educational focus, but also provide an overview of the various medical interventions and check-ups performed during pregnancy. Where appropriate, information was added from the Kaiser Permanente webpage. The Healthy Beginnings prenatal newsletters were published in 1999 and most recently reviewed in October 2007¹²⁸.

In order to identify advice given to pregnant women in Switzerland this report draws on the comprehensive information provided on the website *Swissmom* (available at: www.swissmom.ch). *Swissmom* offers information and suggestions for pregnant women throughout all antenatal care phases and comprises lifestyle recommendations as well as medical information. For the latter, the *Swissmom* website was used in conjunction with a clinical practice report from the University Hospital Basel¹²⁹ to retrieve data about antenatal clinical practice in Switzerland. The current version of *Swissmom* dates to 2003, whereas various sections of advice to pregnant women have been updated recently and are continuously revised.

The editorial board of *Swissmom* consists of midwives, physicians (specialists for human genetics, prenatal diagnostics and dentists), child care nurses, legal advisors, dieticians and pharmacists¹³⁰. Additionally a board of 37 health professionals from the field of gynaecology, obstetrics, paediatrics

¹²¹ Khaschei 2006

¹²² Bundesausschuß der Ärzte und Krankenkassen 2008a

¹²³ Bundesausschuß der Ärzte und Krankenkassen 2008b

¹²⁴ Bundesausschuß der Ärzte und Krankenkassen 2008a

¹²⁵ Bund Deutscher Hebammen e.V. 2004

¹²⁶ Public Health Agency of Canada 2008

¹²⁷ Minister of Public Works and Government Services 2006a

¹²⁸ Kaiser Permanente 1999a

¹²⁹ Horner & Hösli 2004

¹³⁰ *Swissmom* 2003

and human genetics are committed to review the information¹³¹. In addition, references to Swissmom can be found on the websites of the Swiss Association for Reproductive Medicine¹³² and the Swiss Association for Gynecology and Obstetrics¹³³.

In order to obtain a comprehensive overview of antenatal care standards and practice in Australia three different but complimentary data sources were selected for this report. These include advice found on the Better Health Channel website, hosted by the Victorian Department for Human Services¹³⁴ as well as clinical guidelines on perinatal practice published by the Department of Health of South Australia¹³⁵ and the 3Centres Collaboration¹³⁶.

The Better Health Channel (available at: <http://www.betterhealth.vic.gov.au/>) was founded in 1999 by the Department of Human Services in Victoria, Australia and serves as a consumer health information website for the community of Victoria. According to the Department of Human Services, the Better Health Channel is one of the most visited health and medical websites in Australia with over 900,000 unique visitors each month. The information found on the website is developed in conjunction with various content partners, who are health or health-related organisations with specialised knowledge in particular topic areas. All fact sheets containing health-related information pass through a rigorous approval process that includes health and medical experts from the content partner organisation, editorial staff and final approval by the Victorian Department of Human Services¹³⁷. Pregnancy related information on the Better Health Channel is regularly updated, e.g. in October 2007 for the section about smoking¹³⁸ and in November 2007¹³⁹ for the section regarding diet during pregnancy.

The South Australian Perinatal Practice Guidelines have been developed by the South Australian Department of Health with the aim to assist health care practitioners and women to choose appropriate care options in pregnancy. The guidelines aspire to include the most recent knowledge and practice of perinatal care and are based on the best available evidence. Furthermore, sections are individually reviewed and updated using scientific evidence (e.g. in October 2008 for advice)¹⁴⁰.

These guidelines are developed by the 3Centres Collaboration, a joint steering group of senior obstetric and midwifery managers from Melbourne’s three tertiary maternity hospitals or centres. These are Mercy Hospital for Women, The Royal Women’s Hospital and Monash Medical Centre (Southern Health). The steering group also includes the Directors of the Perinatal Emergency Referral Service (PERS) and the Maternity and Newborn Clinical Network (MNCN). Two senior representatives from the Victorian Department of Human Services (DHS) participate in the group as non-voting members. The self-proclaimed aim of the 3Centres Collaboration lies in “applying the best available evidence and expertise to maternity care in Victoria Australia”. Antenatal care guidelines follow the principles of being safe and scientific, women centred, equitable and accessible, cost-effective and collaborative. The woman is seen as a partner in the decision-making process and the guidelines contribute to an overall learning process for the health staff¹⁴¹. The guidelines are developed for a “normal healthy woman with an uncomplicated pregnancy”¹⁴². They were last updated in 2005¹⁴³. A comprehensive literature review was performed for areas which were considered to yield new evidence. Views and preferences of consumers were sought through a series of focus groups and consumer workshops. Implications with regard to the costs of implementation were discussed, but there was no economic evaluation undertaken¹⁴⁴.

¹³¹ Swissmom 2003

¹³² Schweizerische Gesellschaft für Reproduktionsmedizin n.d.

¹³³ Schweizerische Gesellschaft für Gynäkologie und Geburtshilfe 2008

¹³⁴ Department of Human Services n.d.

¹³⁵ Department of Health 2005a

¹³⁶ Mercy Hospital for Women, Southern Health and Women’s & Children’s Health 2001

¹³⁷ Department of Human Services n.d.

¹³⁸ Department of Human Services 2007a

¹³⁹ Department of Human Services 2007b

¹⁴⁰ Department of Health 2005b

¹⁴¹ Mercy Hospital for Women, Southern Health and Women’s & Children’s Health n.d.

¹⁴² Mercy Hospital for Women, Southern Health and Women’s & Children’s Health 2006

¹⁴³ Mercy Hospital for Women, Southern Health and Women’s & Children’s Health n.d. b

¹⁴⁴ Mercy Hospital for Women, Southern Health and Women’s & Children’s Health n.d. b

Data from Sweden is limited to nutritional advice during pregnancy and were obtained from the National Food Administration (*Livsmedelverket*). The Swedish data were published in 2007 and form part of an English translation of nutritional guidelines, which were published in autumn 2008¹⁴⁵.

3. Advice given to pregnant women

This section uses a comparative approach to elucidate advice given to pregnant women in the selected countries. This advice includes not only lifestyle issues such as diet, smoking, physical exercise and drugs, but also various specific pregnancy-related health concerns and the appropriate personal responses to these. Where applicable, the following sections present both positive advice (what should be done) as well as negative advice (what should not be done).

3.1 The delivery and setting of advice to pregnant women

When providing advice to women in the early weeks of pregnancy, the UK states that information should be given in a form that is easy to understand and accessible to all pregnant women, also those with special needs, such as physical, sensory or learning disabilities, and to pregnant women who do not speak or read English.

With regards to the setting of antenatal care appointments, pregnant women in the UK are encouraged by the health worker to choose the setting in which they feel comfortable and able to discuss sensitive problems that may affect their pregnancy and lifestyle (such as, domestic violence, sexual abuse, mental illness or use of recreational drugs)¹⁴⁶. At any appointment with an antenatal care worker, pregnant women’s religious, cultural and ethical needs should be respected. Moreover, the antenatal care setting should cater for patients’ physical or mental disabilities as well as arrange appropriate translation or advocating capacities in case of language barriers.

Canada recommends that education on pregnancy be incorporated into school curricula and the workplace, delivered through the media, and offered through community-based agencies.¹⁴⁷

3.2 Diet

Dietary recommendations form an essential part of the advice given to pregnant women in every guideline reviewed for this report^{148,149,150,151,152}. The British, German, Swiss, Swedish and Kaiser Permanente guidelines suggest that starchy food items such as bread, pasta, rice and potatoes should form the major part of the everyday diet. Fruits and vegetables as a second essential part of the daily diet are recommended in Switzerland, Germany (5 units a day), Sweden (root vegetables, pulses and high calcium vegetables), Australia and Kaiser Permanente guidelines. Ideal protein sources for pregnant women should include lean meat, chicken, fish and eggs in Germany, Kaiser Permanente and Switzerland. Some guidelines also suggest pasteurized milk, hard and cream cheese and yoghurt as sources of calcium consumed in Germany (2-3 servings per day) and Sweden¹⁵³ (as desired).

Sufficient hydration is regarded as particularly important during pregnancy in guidelines from Germany, Switzerland, Sweden and Kaiser Permanente. Switzerland recommends that pregnant women drink a minimum of 1.5 litres of water per day, while German and Kaiser Permanente guidelines advise women to drink 2-3 litres of water daily. With regards to food intake, reviewed guidelines from Germany, Kaiser Permanente, Canada¹⁵⁴, Sweden and Switzerland recommend that pregnant women divide their food intake into five small meals per day.

Guidelines throughout the surveyed countries agree that caffeine intake should be limited during pregnancy. The Kaiser Permanente guidelines suggest one cup of coffee per day, Australia advises no

¹⁴⁵ National Food Administration 2007

¹⁴⁶ National Collaborating Centre for Women’s and Children’s Health 2008

¹⁴⁷ Minister of Public Works and Government Services 2000b

¹⁴⁸ National Collaborating Centre for Women’s and Children’s Health 2008

¹⁴⁹ Khaschei 2006

¹⁵⁰ Swissmom 2003

¹⁵¹ National Food Administration 2007

¹⁵² Kaiser Permanente 1999a

¹⁵³ National Food Administration 2007

¹⁵⁴ Public Health Agency of Canada 2008

more than two cups of caffeinated drinks per day¹⁵⁵, Sweden, Switzerland and Germany suggest to limit caffeine intake to three cups of coffee per day, while the UK and Canada generally advise no more than 300mg of caffeine intake per day during pregnancy – the equivalent of about three cups of coffee. Beverages containing quinine (e.g. from soft drinks of the tonic or bitter lemon type) should be consumed only in limited amounts, according to German and Swiss (1-2 glasses per day) guidelines.

Canada advises pregnant women on low cost healthy items¹⁵⁶, while through the UK “Health Start program” women under 18 or receiving income support are eligible for a weekly £3.00 voucher, which can be spent on milk, fresh fruit and vegetables and/or infant formula milk¹⁵⁷.

In addition to what should be eaten by pregnant women, all countries produce a list of foodstuff which should not be consumed during pregnancy. Raw and undercooked meat, raw fish, raw eggs and soft mould ripened cheeses should be avoided according to all guidelines^{158,159,160,161,162,163,164} examined. Sweden explicitly adds cured meats and cured poultry to that list. Germany, Switzerland, Canada, Kaiser Permanente, Australia and Sweden explicitly advise not to consume raw milk during pregnancy as well. Kaiser Permanente, Australia, the UK and Canada warn also to limit the consumption of fish containing high levels of mercury, such as shark and king mackerel. Sweden employs an extensive list of fish types which should not be consumed during pregnancy together with a list of fish which is safe for consumption. The negative list includes tuna (fresh/frozen), cured fish, eel and shark, while the positive list comprises fish from the open sea (i.e. haddock) as well as farmed fish.

Furthermore, pregnant women are recommended to limit their intake of liver according to the UK, German and Australian guidelines. According to Swedish guidelines women should not consume Calabash chalk during pregnancy. All guidelines state that food items which are high in (polysaccharidic) sugar or fat should be reduced^{165,166,167,168,169,170,171}, while Switzerland¹⁷² and Germany¹⁷³ highlight the importance of oil consumption, specifically olive and colza oil, which contain high levels of unsaturated fatty acids.

Advice on food hygiene and avoidance of food-borne infections is advisable to women according to the UK¹⁷⁴, Swiss¹⁷⁵, Kaiser Permanente¹⁷⁶, Swedish¹⁷⁷ and Australian¹⁷⁸ guidelines and comprises appropriate means of storing and processing food items as well as personal (hand) hygiene.

Guidelines from Australia¹⁷⁹ and Sweden¹⁸⁰ suggest that there is no need for increased food consumption during pregnancy. For the first trimester the pregnant women’s energy intake is suggested to be roughly comparable to that before pregnancy. During the second and third trimester, it is estimated that energy requirements increase by approximately 600kJ (approx. 150 kcal) a day. This additional energy need should be mainly covered by increased fruit consumption (four servings a

¹⁵⁵ Department of Human Services 2007c

¹⁵⁶ Public Health Agency of Canada 2008

¹⁵⁷ National Health Service 2006

¹⁵⁸ Khaschei 2006

¹⁵⁹ National Collaborating Centre for Women’s and Children’s Health 2008

¹⁶⁰ Swissmom 2003

¹⁶¹ Kaiser Permanente 1999a

¹⁶² Department of Human Services 2007b

¹⁶³ Public Health Agency of Canada 2008

¹⁶⁴ National Food Administration 2007

¹⁶⁵ Khaschei 2006

¹⁶⁶ National Collaborating Centre for Women’s and Children’s Health 2008

¹⁶⁷ Swissmom 2003

¹⁶⁸ Kaiser Permanente 1999a

¹⁶⁹ Department of Human Services 2007b

¹⁷⁰ Public Health Agency of Canada 2008

¹⁷¹ National Food Administration 2007

¹⁷² Swissmom 2003

¹⁷³ Khaschei 2006

¹⁷⁴ National Collaborating Centre for Women’s and Children’s Health 2008

¹⁷⁵ Swissmom 2003

¹⁷⁶ Kaiser Permanente 1999a

¹⁷⁷ National Food Administration 2007

¹⁷⁸ Department of Human Services 2007b

¹⁷⁹ Department of Human Services 2007b

¹⁸⁰ National Food Administration 2007

day)¹⁸¹. Swiss guidelines recommend an additional intake of 250 to 300kcal from the third month of gestation¹⁸².

3.3 Nutritional supplementation

Folic acid

Folic acid is regarded as a key nutritional supplement by all reviewed country guidelines. Supplementation with folic acid is strongly advised before conception and up to 12 weeks of gestation with an uniformly set additional recommended dose of 0.4 mg per day in all reviewed guidelines^{183,184,185,186,187,188}. Swedish guidelines do not provide details about the amount of recommended folic acid intake but suggest consulting a midwife for further information. While the UK and Australian guidelines do not specify the recommended period of intake before pregnancy, the reviewed guidelines from Germany¹⁸⁹ (4 weeks before pregnancy), Canada¹⁹⁰ (1 month before pregnancy) as well as Kaiser Permanente¹⁹¹ and Switzerland¹⁹² (3 month before pregnancy) formulate explicit recommendations.

Canadian guidelines mention that women with a family history of neural tube defects, women with diabetes, or women who are taking anticonvulsant drugs may require a dosage that is higher than 0.4 mg¹⁹³. Australian guidelines suggest supplementation of 5mg folic acid per day in case women suffer from a medical condition such as epilepsy or diabetes¹⁹⁴. Kaiser Permanente guidelines advise pregnant women to eat folate-rich food items which allow for a supplementation of 0.4 mg per day¹⁹⁵.

Iron

UK guidelines state that iron supplementation should not be routinely offered to women¹⁹⁶. Reviewed Canadian guidelines generally recommend women aged 19 to 49 (regardless of a potential pregnancy) to ingest 13mg of iron daily¹⁹⁷. Germany¹⁹⁸ and Kaiser Permanente¹⁹⁹ guidelines advise women to consume food items, which are rich in iron, e.g. fish. Also Kaiser Permanente guidelines suggest that women should have a daily iron supplementation of 30 to 60 mg. Besides eating iron-rich food reviewed Swedish guidelines recommend to consult a health professional about additional iron intake²⁰⁰.

Vitamin D

Additional vitamin D intake might be beneficial according to UK guidelines (up to 10 micrograms per day) and is given to specified groups of women. These groups include: women of South Asian, African, Caribbean or Middle Eastern family origin; women who have limited exposure to sunlight, such as women who are predominantly housebound, or usually remain covered when outdoors; women who maintain a diet particularly low in vitamin D, such as women who consume no oily fish, eggs, meat, vitamin D-fortified margarine or breakfast cereal; and women with a pre-pregnancy body mass index (BMI) above 30 kg/m²²⁰¹. Australian guidelines advise dark-skinned women of a non-Western background or women who have little exposure to sunlight to ingest 25 mcg of Ostelin

¹⁸¹ Department of Human Services 2007b

¹⁸² Swissmom 2003

¹⁸³ National Collaborating Centre for Women’s and Children’s Health 200

¹⁸⁴ Khaschei 2006

¹⁸⁵ Minister of Public Works and Government Services 2006b

¹⁸⁶ Swissmom 2003

¹⁸⁷ Kaiser Permanente 1999a

¹⁸⁸ Department of Human Services 2007b

¹⁸⁹ Khaschei 2006

¹⁹⁰ Minister of Public Works and Government Services 2006b

¹⁹¹ Kaiser Permanente 1999a

¹⁹² Swissmom 2003

¹⁹³ Minister of Public Works and Government Services 2006b

¹⁹⁴ Department of Health 2005c

¹⁹⁵ Kaiser Permanente 1999a

¹⁹⁶ Minister of Public Works and Government Services 2006b

¹⁹⁷ Minister of Public Works and Government Services 2006b

¹⁹⁸ Khaschei 2006

¹⁹⁹ Kaiser Permanente 1999a

²⁰⁰ National Food Administration 2007

²⁰¹ National Collaborating Centre for Women’s and Children’s Health 2008

daily²⁰². In the reviewed Canadian guidelines it is recommended that women planning to have a baby consume 700 mg of calcium daily and 100 IU of vitamin D prior to conception²⁰³.

Vitamin A

All consulted guidelines agree, that precaution must be exercised when advising vitamin A supplementation^{204,205,206,207,208,209}. Reviewed UK guidelines recommend pregnant women to refrain from a vitamin A intake greater than 0.7 mg per day²¹⁰. Canadian guidelines do not recommend additional vitamin A intake and advise women taking multivitamin/multimineral supplementations to limit their intake to one tablet per day²¹¹.

Iodine

Additional iodine intake, a dose of 0.23mg per day²¹², is solely recommended by German guidelines (for all pregnant women), while Swiss guidelines generally try to raise women’s awareness to ensure daily ingestion of 0.23 to 0.26mg of iodine and to increase there daily magnesium intake to 450-500 mg²¹³.

3.4 Alcohol

Alcohol consumption during pregnancy is generally counter-advised throughout the reviewed guidelines of the UK²¹⁴, Germany²¹⁵, Canada²¹⁶, Switzerland²¹⁷, Kaiser Permanente²¹⁸ and Australia²¹⁹. Specific recommendations though vary among the reviewed materials. The UK guidelines generally advise to avoid drinking if possible and strongly suggest to at least completely abstain from alcohol during the first three months of pregnancy. According to UK guidelines, women who feel unable to refrain from alcohol consumption should limit their intake to a maximum of one or two UK units of alcohol once or twice per week (equivalent to 10ml of pure alcohol), while binge drinking (more than 7.5 units of alcohol at a single occasion) is strongly discouraged.

Reviewed guidelines from Switzerland recommend refraining from drinking alcohol at least during the first 14 weeks of pregnancy. Australian guidelines advise pregnant women to consider not drinking alcohol at all or to at least limit their consumption to less than seven standard drinks a week and no more than two standard drinks at any single occasion.

A total abstinence from drinking alcohol is strictly recommended in the guidelines of Kaiser Permanente²²⁰, Canada²²¹ and Germany²²². Health care providers in Canada are advised to assist women with supportive information and appropriate referrals. Moreover Canadian guidelines suggest including the partner in the drinking cessation process.

3.5 Smoking and drugs

All consulted guidelines maintain a strongly discouraging attitude towards smoking during pregnancy^{223,224,225,226,227,228}. The UK and Canadian guidelines emphasize the importance of mentioning

²⁰² Department of Health 2005c

²⁰³ Minister of Public Works and Government Services 2000b

²⁰⁴ National Collaborating Centre for Women’s and Children’s Health 2008

²⁰⁵ Khaschei 2006

²⁰⁶ Minister of Public Works and Government Services 2000b

²⁰⁷ Swissmom 2003

²⁰⁸ Kaiser Permanente 1999a

²⁰⁹ Department of Human Services 2007b

²¹⁰ National Collaborating Centre for Women’s and Children’s Health 2008

²¹¹ Minister of Public Works and Government Services 2000b

²¹² Khaschei 2006

²¹³ Swissmom 2003

²¹⁴ National Collaborating Centre for Women’s and Children’s Health 200

²¹⁵ Khaschei 2006

²¹⁶ Minister of Public Works and Government Services 2000b

²¹⁷ Swissmom 2003

²¹⁸ Kaiser Permanente 1999a

²¹⁹ Department of Human Services 2007b

²²⁰ Kaiser Permanente 1999a

²²¹ Public Health Agency of Canada 2008

²²² Khaschei 2006

²²³ National Collaborating Centre for Women’s and Children’s Health 2008

²²⁴ Khaschei 2006

²²⁵ Minister of Public Works and Government Services 2000b

that smoking cessation at any stage of pregnancy is beneficial and proactively advises women on nicotine replacement therapy. Smoking pregnant women in the UK²²⁹, Canada²³⁰, Germany²³¹, Switzerland²³², Kaiser Permanente²³³ and Australia²³⁴ are offered help through various institutions within the health care system, such as general practitioners, smoking help lines or associations targeting women’s health. Guidelines from Switzerland and Australia mention that even gradual improvements towards quitting smoking have impacts on the chance of having a healthy newborn.

Besides recommendations for smoking cessation, all guidelines highlight the importance of avoiding exposure to second-hand smoke whenever possible^{235,236,237,238,239,240}.

The use of recreational drugs including cannabis, heroin, cocaine and amphetamines during pregnancy is associated with adverse effects for the baby and thus strongly counter-advised in all reviewed guidelines^{241,242,243,244,245,246}.

3.6 Physical activity

Beginning or continuing a moderate course of physical exercise during pregnancy is recommended throughout the reviewed countries and guidelines^{247,248,249,250,251,252}. Moderate exercise for 30 minutes per day at a maximum heart rate of 140 beats per minute is suggested in guidelines for Australia²⁵³, Switzerland²⁵⁴, Canada²⁵⁵, and in the Kaiser Permanente guidelines²⁵⁶. Reviewed guidelines for pregnant women in Canada²⁵⁷, Switzerland²⁵⁸, Germany²⁵⁹ and Australia²⁶⁰ and those issued by Kaiser Permanente²⁶¹ regard swimming and (light) jogging as beneficial for pregnant women.

The Swiss²⁶² and Kaiser Permanente²⁶³ guidelines contain an extensive list of sports which should be partly or completely avoided during pregnancy. These include gymnastics, horse-riding, soccer, martial arts and scuba diving. The UK guidelines advise women to refrain from high-impact and vigorous sports and activities, e.g. contact sports, vigorous racket sports and scuba diving²⁶⁴; while Canadian guidelines discourage the engagement of pregnant women in vigorous exercise programs²⁶⁵.

²²⁶ Swissmom 2003

²²⁷ Kaiser Permanente 1999d

²²⁸ Department of Human Services 2007a

²²⁹ National Collaborating Centre for Women’s and Children’s Health 2008

²³⁰ Minister of Public Works and Government Services 2000b

²³¹ Khaschei 2006

²³² Swissmom 2003

²³³ Kaiser Permanente 1999a

²³⁴ Department of Human Services 2007a

²³⁵ National Collaborating Centre for Women’s and Children’s Health 2008

²³⁶ Khaschei 2006

²³⁷ Minister of Public Works and Government Services 2000b

²³⁸ Swissmom 2003

²³⁹ Kaiser Permanente 1999d

²⁴⁰ Department of Human Services 2007a

²⁴¹ National Collaborating Centre for Women’s and Children’s Health 2008

²⁴² Khaschei 2006

²⁴³ Minister of Public Works and Government Services 2000b

²⁴⁴ Swissmom 2003

²⁴⁵ Kaiser Permanente 1999d

²⁴⁶ Department of Human Services 2007a

²⁴⁷ National Collaborating Centre for Women’s and Children’s Health 2008

²⁴⁸ Khaschei 2006

²⁴⁹ Public Health Agency of Canada 2008

²⁵⁰ Swissmom 2003

²⁵¹ Kaiser Permanente 1999c

²⁵² Department of Human Services 2007e

²⁵³ Department of Human Services 2007e

²⁵⁴ Swissmom 2003

²⁵⁵ Public Health Agency of Canada 2008

²⁵⁶ Kaiser Permanente 1999c

²⁵⁷ Public Health Agency of Canada 2008

²⁵⁸ Swissmom 2003

²⁵⁹ Khaschei 2006

²⁶⁰ Department of Human Services 2007e

²⁶¹ Kaiser Permanente 1999c

²⁶² Swissmom 2003

²⁶³ Kaiser Permanente 1999c

²⁶⁴ National Collaborating Centre for Women’s and Children’s Health 2008

²⁶⁵ Minister of Public Works and Government Services 2000b

Pelvic floor exercises are recommended in the Swiss²⁶⁶, German²⁶⁷, UK²⁶⁸, Australian²⁶⁹ and Kaiser Permanente²⁷⁰ advice guidelines. Guidelines from Switzerland²⁷¹ and Kaiser Permanente²⁷² additionally advise women to attend birth education and preparatory birth classes.

Australian guidelines recommend women to avoid hyperthermia (core body temp > 38° C), for example by not taking hot baths²⁷³. Kaiser Permanente²⁷⁴ and Canadian guidelines²⁷⁵ routinely advise pregnant women to avoid hot tubs and saunas. Swiss guidelines in principle suggest avoiding or reducing hot tubs and sauna at least in the early stage of pregnancy²⁷⁶. Women who are already used to frequent sauna visits may however continue taking hot tubs and going to saunas according to Swiss²⁷⁷ and German²⁷⁸ guidelines.

3.7 Sexual intercourse

All reviewed guidelines agree that pregnant women should be informed that sexual intercourse during pregnancy is not known to be associated with any adverse outcomes. Personal well-being should be used as reference point for the judgements of appropriate positions during sexual intercourse^{279,280,281,282,283,284}.

3.8 Piercing

Swiss guidelines advise women with nipple piercings to remove these by the 6th month of gestation²⁸⁵.

3.9 Travel

While travelling *per se* is not counter-advised by all reviewed country guidelines, certain potential limitations are described and advice is given to pregnant women^{286,287,288,289,290,291}. The second trimester is recommended as the best time for travelling by Australian²⁹², Swiss, and Kaiser Permanente guidelines²⁹³; while German guidelines regard the 5th month as most appropriate time for travelling.

The UK, German, Swiss, Kaiser Permanente²⁹⁴ and Australian guidelines²⁹⁵ counsel women on the importance and correct use of seatbelts - three-point seatbelts are to be worn low, below the baby.

For (long-haul) air travel, UK, Australian and Swiss guidelines recommend pregnant women to consider wearing correctly fitted compression stockings and to ensure occasional walking up and down the aisles. Moreover, the UK, Australian, Swiss, German and Kaiser Permanente²⁹⁶ guidelines inform pregnant women that most airlines may refuse to accept them as passengers after the 36th week

²⁶⁶ Swissmom 2003

²⁶⁷ Khaschei 2006

²⁶⁸ National Collaborating Centre for Women’s and Children’s Health 2008

²⁶⁹ Department of Human Services 2007e

²⁷⁰ Kaiser Permanente 1999c

²⁷¹ Swissmom 2003

²⁷² Kaiser Permanente 1999c

²⁷³ Department of Health 2005c

²⁷⁴ Kaiser Permanente 1999a

²⁷⁵ Minister of Public Works and Government Services 2000b

²⁷⁶ Swissmom 2003

²⁷⁷ Minister of Public Works and Government Services 2000b

²⁷⁸ Khaschei 2006

²⁷⁹ National Collaborating Centre for Women’s and Children’s Health 2008

²⁸⁰ Khaschei 2006

²⁸¹ Minister of Public Works and Government Services 2000b

²⁸² Swissmom 2003

²⁸³ Kaiser Permanente 1999a

²⁸⁴ Department of Human Services 2007b

²⁸⁵ Swissmom 2003

²⁸⁶ National Collaborating Centre for Women’s and Children’s Health 2008

²⁸⁷ Khaschei 2006

²⁸⁸ Minister of Public Works and Government Services 2000b

²⁸⁹ Swissmom 2003

²⁹⁰ Kaiser Permanente 1999d

²⁹¹ Department of Human Services 2007d

²⁹² Department of Human Services 2007b

²⁹³ Kaiser Permanente 1999d

²⁹⁴ Kaiser Permanente 1999a

²⁹⁵ Department of Human Services 2007d

²⁹⁶ Kaiser Permanente 1999d

of gestation. According to UK, Swiss, German, Kaiser Permanente and Australian guidelines women should discuss issues such as flying, vaccinations and travel insurance, with their health care provider.

3.10 Medicines

Medicines intake without prior medical consultation is generally counter-advised in all reviewed guidelines^{297,298,299,300,301,302}. According to UK and Kaiser Permanente guidelines pharmaceutical products which should generally be avoided during pregnancy include over-the-counter (OTC) drugs. These should, following suggestions from Kaiser Permanente, particularly be avoided during the first three month of pregnancy. Based on UK guidelines, women should be informed that only a few complementary therapies are considered safe and effective during pregnancy. All guidelines advise women to consult their health care provider before taking any medicine.

3.11 Common health problems during pregnancy

Heartburn, constipation and haemorrhoids

Reviewed guidelines from Switzerland³⁰³, the UK³⁰⁴, Canada³⁰⁵, Kaiser Permanente³⁰⁶, Australia³⁰⁷ and Germany³⁰⁸ provide advice on common health problems of pregnant women. The UK, Canadian, German and Australian guidelines recommend giving pregnant women who are suffering from heartburn advice on diet modification. Furthermore, UK, Canadian and German guidelines also recommend dietary changes for women with constipation and haemorrhoids (e.g., high fibre meals). Women should be offered gentle medication for persisting heartburn following UK and Swiss guidelines. This equally applies to haemorrhoids according to UK, Kaiser Permanente and Swiss guidelines.

Nausea and vomiting

Following UK, US and Swiss and Canadian guidelines, pregnant women should be informed that nausea and vomiting will resolve spontaneously by the 16th to 20th week of gestation (end of the first trimester under Swiss and Canadian guidelines/ after three to four months based on Kaiser Permanente guidelines) and that nausea and vomiting are usually not associated with poor pregnancy outcome (UK). Treatment of nausea and vomiting should be limited to non-pharmacological measures including ginger and P6 (wrist) acupuncture as well as antihistamines^{309,310}. Besides acupressure wristbands, German guidelines recommend homeopathic products for the treatment of nausea, Australian guidelines suggest dietary adjustments, while Canadian guidelines provide a list on how to cope by changing behaviour (e.g., avoid having an empty stomach and getting plenty of fresh air).

Varicose veins

While UK guidelines regard varicose veins as a normal and harmless phenomenon during pregnancy, Swiss guidelines inform pregnant women about the potential dangers involved, such as phlebitis and thrombosis. UK and Swiss guidelines advise women to use compression stockings to impede the onset of varicose veins.

Vaginal discharge

Swiss³¹¹, Kaiser Permanente³¹² and UK guidelines³¹³ inform women that an increased vaginal discharge is a common physiological phenomenon during pregnancy. While the UK guideline

²⁹⁷ National Collaborating Centre for Women’s and Children’s Health 2008

²⁹⁸ Khaschei 2006

²⁹⁹ Minister of Public Works and Government Services 2000b

³⁰⁰ Swissmom 2003

³⁰¹ Kaiser Permanente 1999c

³⁰² Department of Health 2007c

³⁰³ Swissmom 2003

³⁰⁴ National Collaborating Centre for Women’s and Children’s Health 2008

³⁰⁵ Public Health Agency of Canada 2008

³⁰⁶ Kaiser Permanente 1999a

³⁰⁷ Department of Human Services 2007b

³⁰⁸ Khaschei 2006

³⁰⁹ National Collaborating Centre for Women’s and Children’s Health 2008

³¹⁰ Swissmom 2003

³¹¹ Swissmom 2003

³¹² Kaiser Permanente 1999b

³¹³ National Collaborating Centre for Women’s and Children’s Health 2008

recommends a one week course of tropical imidazole for vaginal candidiasis treatment, the Swiss guidelines suggest an acidification or stabilization of the vaginal area through diluted citric acid or camomile. Kaiser Permanente guidelines recommend vaginal hygiene and the application of Monistat, in case of a yeast infection.

Backache

In order to ease potential backache, the UK guidelines recommend massage therapy and water exercise³¹⁴. Back strengthening exercises are recommended by UK and German³¹⁵ guidelines, while the Swiss guidelines suggest warm (not hot) baths, physiotherapy and only in persistent cases, the intake of Paracetamol³¹⁶.

3.12 Dental and oral health

In Germany, pregnant women are recommended to brush their teeth after each meal and to use a high fluoridic toothpaste once a week. Women suffering from gum bleeding are advised to gargle with camomile or sage tea. Furthermore, a dental consultation during early pregnancy is advised. Doctors treating pregnant women are recommended to advise them on their own and their baby’s dental health in the third trimester of pregnancy³¹⁷.

Swiss guidelines recommend that women brush their teeth twice a day for a minimum of three minutes using a soft tooth brush³¹⁸. Furthermore, according to Swiss and Kaiser Permanente³¹⁹ guidelines, pregnant women should seek a dental consultation. Swiss guidelines specify that one consultation should take place at the beginning of the pregnancy and that another two visits can be arranged during gestation to allow for the removal of dental calculus (tartar) and dental sealing. Dental consultation is especially advised to women who develop halitosis during pregnancy. Fluoridic cooking salt and fluoridic tooth paste is regarded as an effective means of preventing dental decay. Pregnant women, who do not use fluoridic salt, may ingest one fluoridic tablet per day (1mg)³²⁰.

Australian guidelines inform pregnant women about the risk of premature birth due to neglected dental health and recommend that teeth are to be brushed twice a day with fluoridated toothpaste, while not neglecting regular dentist visits and increased calcium and vitamin D intake³²¹.

Canadian guidelines stress the importance of oral health and inform pregnant women that periodontal disease can increase the risk of pre-term delivery or low birth weight. It recommends regular dental checkups and cleaning from the 1st trimester, and specifies the 2nd trimester as the best time for dental work. Also, pregnant women should get enough calcium, vitamins A, C and D, protein and phosphorous by eating well and rinse their mouth after vomiting with water or fluoride mouthwash³²².

3.13 Emotional and mental health

UK guidelines stipulate that the health care provider should ascertain any former and current mental health conditions and identify any psychiatric treatment undergone by the woman. Particular attention should be paid to potential mood changes and the risk of depression. Health professionals should identify women who have had female genital mutilation early in pregnancy through sensitive enquiry. Intrapartum care should be adjusted to these women’s needs. Moreover, UK guidelines state that health professionals should be any potential symptoms of domestic violence. Women should be offered the possibility to disclose domestic violence in an environment in which they feel secure.³²³

German³²⁴, Kaiser Permanente³²⁵ and Canadian³²⁶ guidelines inform women that mood changes are a common reaction of the body’s adjustment to pregnancy. Following Canadian³²⁷ and Swiss³²⁸

³¹⁴ National Collaborating Centre for Women’s and Children’s Health 2008

³¹⁵ Khaschei 2006

³¹⁶ Swissmom 2003

³¹⁷ Khaschei 2006

³¹⁸ Swissmom 2003

³¹⁹ Kaiser Permanente 1999b

³²⁰ Swissmom 2003

³²¹ Department of Human Services 2007f

³²² Public Health Agency of Canada 2008

³²³ National Collaborating Centre for Women’s and Children’s Health 2008

³²⁴ Khaschei 2006

³²⁵ Kaiser Permanente 1999a

³²⁶ Public Health Agency of Canada 2008

guidelines, mood changes may occur particularly around the 6th month and again in the third trimester shortly before labour. In order to keep their mood in balance, pregnant women are advised to follow a balanced diet and an active lifestyle³²⁹.

Within the framework of a psychosocial assessment and counselling, health professionals in Canada are advised to elucidate the emotional and mental health of pregnant women with particular emphasis on relationship issues, anxiety and stress during pregnancy as well as violence in relationships. According to Canadian guidelines, future fathers should also be included in the educational and counselling process.³³⁰

3.14 Environmental and work conditions

Canadian guidelines suggest assessing the pregnant woman’s workplace, home and leisure environment for exposure to toxins or hazardous conditions. Protective reassignment of women at risk for poorer pregnancy outcomes due to difficult working conditions may be prudent prior to pregnancy.

Environmental hazards for pregnant women recognized by the Swiss³³¹ and Canadian guidelines include: chemicals (like DDT), metals (such as lead, copper and zinc), vinyl monomers, aesthetic gases (found in dental offices and operating rooms) and radiation in the form of x-rays.³³² Due to the latter mentioned risk factor, x-ray examinations for pregnant women should according to Swiss guidelines only be considered after a careful risk-benefit assessment.³³³

Based on UK guidelines, women should generally be reassured that working during pregnancy poses no harm. Attending health professionals should refer the woman to the health and safety executive to assess any occupational risks. A good practice point would include the health professional ascertaining the woman’s risk at work³³⁴.

UK and German guidelines state that the health care provider should inform pregnant women about their rights during pregnancy, such as maternity leave.³³⁵ The German guideline mentions the pregnant women are eligible for financial assistance and certain tax exemptions³³⁶.

3.15 Place of delivery

In Germany, Switzerland, Australia, the UK and at Kaiser Permanente women are given various options when choosing the appropriate place of delivery. In the reviewed guidelines, the potential choices include hospitals, birth centres and home delivery. The advantages and disadvantages of each alternative are explained to the pregnant women.

German guidelines regard the hospital setting as advantageous in terms of medical care and equipment, while midwife-led birth centres or deliveries at home may provide a more intimate setting.³³⁷ Australian guidelines inform pregnant women about the possibilities of delivering at a public or private health care setting. In the latter, women are advised on the incurring costs.

4. Clinical guidelines

The following section describes exams, tests and medical interventions performed during antenatal care visits in the UK, Germany, Switzerland, Australia, Canada and Kaiser Permanente setting. The outline follows the schedule of antenatal care visits in the reviewed country settings. Special attention is paid to several selected medical conditions and their non-uniform clinical management described throughout the various guidelines.

³²⁷ Public Health Agency of Canada 2008

³²⁸ Swissmom 2003

³²⁹ Public Health Agency of Canada 2008

³³⁰ Minister of Public Works and Government Services 2000b

³³¹ Swissmom 2003

³³² Minister of Public Works and Government Services 2000b

³³³ Swissmom 2003

³³⁴ National Collaborating Centre for Women’s and Children’s Health 2008

³³⁵ National Collaborating Centre for Women’s and Children’s Health 2008

³³⁶ Khaschei 2006

³³⁷ Khaschei 2006

4.1 Health professionals and continuity of care

The countries investigated specify divergent caregivers involved in the care of pregnant women. Alternative approaches range from a midwife carrying out all antenatal care check-ups (in Switzerland) to the involvement of a multidisciplinary team of health professionals throughout pregnancy and childbirth (Canada).

For low-risk pregnancies the Swiss guidelines suggest that all antenatal care check-ups can be carried out by a midwife, while in the presence of severe medical conditions the care should be delivered by a doctor and a midwife.³³⁸

UK guidelines recommend that midwives and general practitioners (GPs) care for women with an uncomplicated pregnancy, providing continuous care throughout the entire pregnancy. Obstetricians and teams of medical specialists should be involved where additional care is needed.³³⁹

German guidelines stipulate that maternity care should be provided by a network of well trained doctors, midwives and nurses. Physicians who do not possess sufficient knowledge and expertise in the relevant field are not entitled to provide medical interventions during pregnancy³⁴⁰.

The Canadian guidelines reviewed for the present report stress that women should be provided with care from the same or a familiar group of health care providers during pregnancy and childbirth. The involved group of health professionals stretches across primary care givers to mental, family, home support and social workers as well as nutritionists, consultant specialists and physiotherapists³⁴¹.

Australian Three Centres Consensus guidelines state the wherever possible, women should be offered continuity of care, including continuity of carer. Pregnant women are furthermore informed that midwife and GP-led models of care are considered safe for low risk women³⁴².

4.2 Frequency of antenatal visits

The majority of settings that were examined recommend ten antenatal appointments for nulliparous women. As the length of gestation increases the appointments are recommended to occur on a more frequent basis, i.e. from on average four to six weeks in early pregnancy to every one to two weeks nearing delivery.

UK guidelines recommend ten antenatal care check-ups for nulliparous women experiencing an uncomplicated pregnancy³⁴³. These are scheduled to occur in the 10th, 16th, 25th, 28th, 31st, 34th, 36th, 38th, 40th and 41st week of gestation with an optional anomaly scan between the 18th and 20th week.³⁴⁴

Swiss guidelines also suggest ten appointments³⁴⁵, even though statutory health insurance covers only seven of these visits³⁴⁶. The university hospital in Basel schedules antenatal care appointments (by the latest) in the 12th, 16th, 25th, 28th, 31st, 34th, 38th, 40th and 41st week, with an additional appointment according to the needs of the pregnant woman³⁴⁷.

Kaiser Permanente guidelines suggest eight to ten visits³⁴⁸ beginning from the 6th to 10th week³⁴⁹ and following that, in the 10th to 12th³⁵⁰, 16th to 20th³⁵¹, 20th to 24th³⁵², 24th to 28th³⁵³, 30th to 32nd³⁵⁴, 36th³⁵⁵, 38th³⁵⁶ and 39th to 40th week of pregnancy.³⁵⁷

³³⁸ Swissmom 2003

³³⁹ National Collaborating Centre for Women’s and Children’s Health 2008

³⁴⁰ Bundesausschuß der Ärzte und Krankenkassen 2008a

³⁴¹ Minister of Public Works and Government Services 2000b

³⁴² Mercy Hospital for Women, Southern Health and Women’s & Children’s Health 2001

³⁴³ National Collaborating Centre for Women’s and Children’s Health 2008

³⁴⁴ National Collaborating Centre for Women’s and Children’s Health 2008

³⁴⁵ Horner & Hösli 2004

³⁴⁶ Das Eidgenössische Departement des Innern 2008

³⁴⁷ Horner & Hösli 2004

³⁴⁸ Kaiser Permanente 1999a

³⁴⁹ Kaiser Permanente 1999a

³⁵⁰ Kaiser Permanente 1999b

³⁵¹ Kaiser Permanente 1999c

³⁵² Kaiser Permanente 1999d

³⁵³ Kaiser Permanente 1999e

³⁵⁴ Kaiser Permanente 1999f

³⁵⁵ Kaiser Permanente 1999g

The Australian Three Centres Consensus guidelines stipulate seven to ten visits, while a good practice would be scheduling eight visits.³⁵⁸ The perinatal care guidelines of the Department of Health in South Australia recommends antenatal care check-ups at around the 10th week and subsequently in weeks 19 to 20, 24, 28, 32, 36, 38, 40 and 41 of pregnancy.³⁵⁹

Germany does not comment on the total numbers of visits in its guidelines but recommends antenatal check-ups every four weeks after the initial visit, with two consultations in the last two months of gestation³⁶⁰. However, the German Union of Midwives recommends a minimum of four antenatal visits³⁶¹.

Canadian guidelines state that “the frequency of prenatal visits should be determined by the physical and psychosocial needs of the woman and her unborn baby” and that based on the available data no recommendation can be made on the optimal number and schedule of visits³⁶². The guidelines further suggests that women with no identifiable risk should, following the initial prenatal visit, be checked on every four to six weeks up to 30 weeks of gestation. After the 30th week, appointments should be scheduled every two to three weeks and after the 36th week every one to two weeks until delivery³⁶³.

4.3 Initial antenatal care consultation

Common elements of the first antenatal care check-up in all reviewed guidelines include: measuring body weight, height and blood pressure; testing urine for proteinuria; and providing women with general lifestyle and pregnancy information. Furthermore, blood tests are offered in all selected countries to check blood group and rhesus D status, screen for anaemia, measure and record haemoglobin levels, as well as screen for hepatitis B virus, HIV, rubella susceptibility and syphilis^{364,365,366,367,368,369}.

Genetic counselling is offered to pregnant women according to German³⁷⁰, Swiss³⁷¹, Canadian³⁷², UK³⁷³ and Kaiser Permanente³⁷⁴ guidelines. Kaiser Permanente guidelines state that women of certain ethnic origins may have an increased risk for a genetic disorder occurring in the newborn³⁷⁵. These ethnic groups and the relevant genetic disorders include: Jewish Ashkenazi or from Eastern European descent (Canavan disease, familial dysautonomia and Tay-Sachs disease), Caucasian/White and non-Hispanic (cystic fibrosis), African American/Black (sickle cell disease) as well as Asian, Southeast Asian and Mediterranean (Thalassemia).

In the guidelines from Germany³⁷⁶, Switzerland³⁷⁷, South Australia³⁷⁸, and Kaiser Permanente³⁷⁹ a medical history record, a complete physical and gynaecological exam as well as a cervical smear are recommended during the first antenatal check-up. Auscultation of the fetal heart is suggested in Switzerland³⁸⁰ and the guidelines from Kaiser Permanente³⁸¹ Coombs test is performed according to

³⁵⁶ Kaiser Permanente 1999h

³⁵⁷ Kaiser Permanente 1999i

³⁵⁸ Mercy Hospital for Women, Southern Health and Women's & Children's Health 2001

³⁵⁹ Department of Health 2005a

³⁶⁰ Bundesausschuß der Ärzte und Krankenkassen 2008a

³⁶¹ Bund Deutscher Hebammen e.V. 2004

³⁶² Minister of Public Works and Government Services 2000c

³⁶³ Minister of Public Works and Government Services 2000c

³⁶⁴ National Collaborating Centre for Women's and Children's Health 2008

³⁶⁵ Bundesausschuß der Ärzte und Krankenkassen 2008a

³⁶⁶ Swissmom 2003

³⁶⁷ Department of Health 2005f

³⁶⁸ Kaiser Permanente 1999a

³⁶⁹ Department of Health 2005f

³⁷⁰ Bundesausschuß der Ärzte und Krankenkassen 2008a

³⁷¹ Swissmom 2003

³⁷² Minister of Public Works and Government Services 2000c

³⁷³ National Collaborating Centre for Women's and Children's Health 2008

³⁷⁴ Kaiser Permanente 1999a

³⁷⁵ Kaiser Permanente 1999a

³⁷⁶ Bundesausschuß der Ärzte und Krankenkassen 2008a

³⁷⁷ Swissmom 2003

³⁷⁸ Department of Health South Australia 2005f

³⁷⁹ Kaiser Permanente 1999a

³⁸⁰ Swissmom 2003

³⁸¹ Kaiser Permanente 1999a

the respective guidelines in Germany³⁸² and Canada³⁸³. Screening for haemoglobinopathies is recommended solely in the UK³⁸⁴ and South Australian guidelines (for specific risk groups only)³⁸⁵.

German guidelines recommend testing pregnant women for a potential Chlamydia trachomatis infection using nucleic acid amplification based tests³⁸⁶, while the UK guidelines solely advise to inform women younger than 25 years about the high prevalence of Chlamydia infection in their age group, and to give them details of their local national Chlamydia screening programme³⁸⁷. Canadian guidelines regard screening for Chlamydia as being clinically effective and suggest screening women in the first trimester of pregnancy, especially women younger than 20 years old with multiple sexual contacts or a history of sexually transmitted diseases³⁸⁸. Screening for asymptomatic bacteriuria is recommended at the first antenatal visit by UK guidelines³⁸⁹ and the Australian Three Centres Consensus guidelines³⁹⁰. The Australian guidelines recommend using either a two-step protocol or microscopy and a culture of a fresh mid-stream urine sample. They also mention chronic renal disease screening as a good practice point³⁹¹. Canadian guidelines suggest a venereal diseases laboratory test to be done by the first antenatal visit³⁹².

A breast examination is part of the first antenatal check-up in South Australia³⁹³, while UK guidelines³⁹⁴ do not recommend breast examinations.

Based on UK guidelines, women should be educated about pre-eclampsia symptoms (such as severe headache, problems with vision, severe pain just below the ribs) and the need to seek professional advice in case any of these symptoms are observed.³⁹⁵

The guidelines of Switzerland at the University Hospital Basel schedule a measurement of pregnancy-associated plasma protein A (PAPP-A) and free β -human chorionic gonadotropin (HCG) at the initial visit of pregnant women³⁹⁶.

The UK³⁹⁷ and Canadian guidelines³⁹⁸ explicitly recommend including a psychological assessment as part of the initial antenatal visit, while the UK³⁹⁹ guidelines advise to pay particular attention to identifying women who suffered from female genital mutilation and women needing additional care due to severe medical conditions or former psychological traumas (e.g. miscarriage, stillbirth, puerperal psychosis).

According to German⁴⁰⁰ and UK⁴⁰¹ guidelines besides the personal, the family medical histories as well as social, work and environmental factors are assessed during the first visit of the pregnant woman. UK guidelines recommend performing blood tests to screen for red-cell alloantibodies and determining risk factors for pre-eclampsia and gestational diabetes. Furthermore UK guidelines suggests, that information about screening for sickle cell diseases and thalassemias, including carrier status and the implications of these, should be given to pregnant women at the first contact with a health care professional. Screening for these diseases should be offered ideally at the first appointment, especially to women whose family origin indicates a high risk of sickle cell disorders, or whose mean corpuscular haemoglobin is below 27 picograms.⁴⁰²

³⁸² Bundesausschuß der Ärzte und Krankenkassen 2008a

³⁸³ Minister of Public Works and Government Services 2000bc

³⁸⁴ National Collaborating Centre for Women’s and Children’s Health 2008

³⁸⁵ Department of Health 2005f

³⁸⁶ Bundesausschuß der Ärzte und Krankenkassen 2008a

³⁸⁷ National Collaborating Centre for Women’s and Children’s Health 2008

³⁸⁸ Minister of Public Works and Government Services 2000c

³⁸⁹ National Collaborating Centre for Women’s and Children’s Health 2008

³⁹⁰ Mercy Hospital for Women, Southern Health and Women’s & Children’s Health 2001

³⁹¹ Mercy Hospital for Women, Southern Health and Women’s & Children’s Health 2001

³⁹² Minister of Public Works and Government Services 2000c

³⁹³ Department of Health 2005f

³⁹⁴ National Collaborating Centre for Women’s and Children’s Health 2008

³⁹⁵ National Collaborating Centre for Women’s and Children’s Health 2008

³⁹⁶ Horner & Hösli 2004

³⁹⁷ National Collaborating Centre for Women’s and Children’s Health 2008

³⁹⁸ Minister of Public Works and Government Services 2000c

³⁹⁹ National Collaborating Centre for Women’s and Children’s Health 2008

⁴⁰⁰ Bundesausschuß der Ärzte und Krankenkassen 2008a

⁴⁰¹ National Collaborating Centre for Women’s and Children’s Health 2008

⁴⁰² National Collaborating Centre for Women’s and Children’s Health 2008

Based on Swiss guidelines the initial antenatal visit includes examinations which aim at detecting varicose veins and leg oedema in pregnant women and may include a toxoplasmosis test⁴⁰³; moreover, a test for bacteriuria is done according to the schedule of the University Hospital in Basel⁴⁰⁴.

A screening for Down’s syndrome and an early ultrasound screening is routinely offered to pregnant women at the first antenatal visit in the UK⁴⁰⁵ and South Australia⁴⁰⁶. South Australian guidelines suggest that blood tests such as a complete blood count and a hepatitis C test should also be part of the initial antenatal assessment after verbal consent. Hepatitis C tests are also recommended by the Australian Three Centres Consensus guidelines for high-risk women (history of injecting drugs, partner who is injecting drugs, long-term dialysis, tattoo or piercing, prison stay) early during pregnancy⁴⁰⁷. South Australian guidelines further recommend offering screening for varicella zoster virus, haemoglobin electrophoresis, vitamin D deficiency and a mantoux skin test for specific risk groups.⁴⁰⁸

Screening for varicella zoster virus antibodies is advised according to the recommendations of German midwives in the case of unknown varicella history and regular contact to children⁴⁰⁹.

Kaiser Permanente guidelines state, that chorionic villus sampling is considered an optional investigation for pregnant women between the 10th and 13th week of gestation. However, women are advised to have an expanded alpha-fetoprotein (expanded AFP) test before deciding to undergo a chorionic villus sampling⁴¹⁰.

4.4 Routine care

All reviewed guidelines recommend taking the pregnant woman’s blood pressure and testing her urine for proteinuria as a routine measure which should be done at each appointment^{411,412,413,414,415,416}. The symphysis-fundal height is routinely measured and recorded according to German, Swiss, Canadian, Kaiser Permanente and South Australian guidelines^{417,418,419,420,421}; while the UK guidelines recommend measuring and plotting the symphysis-fundal height only from the 25th week on (from the 3rd appointment)⁴²².

The pregnant woman’s body weight is routinely measured following German, Swiss, Canadian and Kaiser Permanente guidelines^{423,424,425,426}; while Australian Three Centres Consensus guidelines suggest that there is no conclusive evidence for the practice of weighing women at every antenatal visit⁴²⁷.

Fetal heart auscultation is part of routine care in Germany, Switzerland, Canada, Kaiser Permanente plans and South Australia^{428,429,430,431,432} while this intervention is not routinely offered in the UK⁴³³.

⁴⁰³ Swissmom 2003

⁴⁰⁴ Horner & Hösli 2004

⁴⁰⁵ National Collaborating Centre for Women’s and Children’s Health 2008

⁴⁰⁶ Department of Health 2005f

⁴⁰⁷ Mercy Hospital for Women, Southern Health and Women’s & Children’s Health 2001

⁴⁰⁸ Department of Health 2005f

⁴⁰⁹ Bund Deutscher Hebammen e.V. 2004

⁴¹⁰ Kaiser Permanente 1999a

⁴¹¹ National Collaborating Centre for Women’s and Children’s Health 2008

⁴¹² Bundesausschuß der Ärzte und Krankenkassen 2008a

⁴¹³ Swissmom 2003

⁴¹⁴ Minister of Public Works and Government Services 2000c

⁴¹⁵ Kaiser Permanente 1999a

⁴¹⁶ Department of Health 2005f

⁴¹⁷ Bundesausschuß der Ärzte und Krankenkassen 2008a

⁴¹⁸ Swissmom 2003

⁴¹⁹ Minister of Public Works and Government Services 2000c

⁴²⁰ Kaiser Permanente 1999a

⁴²¹ Department of Health 2005f

⁴²² National Collaborating Centre for Women’s and Children’s Health 2008

⁴²³ Bundesausschuß der Ärzte und Krankenkassen 2008a

⁴²⁴ Swissmom 2003

⁴²⁵ Minister of Public Works and Government Services 2000c

⁴²⁶ Kaiser Permanente 1999a

⁴²⁷ Mercy Hospital for Women, Southern Health and Women’s & Children’s Health 2001

⁴²⁸ Bundesausschuß der Ärzte und Krankenkassen 2008

⁴²⁹ Swissmom 2003

⁴³⁰ Minister of Public Works and Government Services 2000c

German⁴³⁴ and Swiss guidelines⁴³⁵ incorporate glucose and leucocytes urine test, as well as determining the position of the embryo in the antenatal routine, while Canadian⁴³⁶ and South Australian guidelines⁴³⁷ routinely record the gestational age and the foetal movements. Fetal movements are also recorded according to Kaiser Permanente guidelines from the 5th appointment on (week 30 to 32)⁴³⁸. Germany routinely records the haemoglobin test results of the pregnant woman from the 6th month on, if the initial test was positive⁴³⁹.

4.5 Follow-up examinations and subsequent visits

Switzerland’s guidelines suggest a follow-up of the results from the initial antenatal appointment in week 16 (2nd visit)⁴⁴⁰.

UK guidelines suggest investigating a haemoglobin level below 11 g/100 ml at week 16 (2nd appointment) and a haemoglobin level below 10.5 g/100 ml at week 28 (4th appointment) and recommends considering iron supplements where these levels are not met⁴⁴¹. While in Germany further investigations in subsequent visits are done at the critical level of 11.2 g/100 ml⁴⁴².

South Australian guidelines recommend further assessment using cardiotocography or ultrasound scanning for women experiencing reduced numbers of fetal movements (< ten movements in 12 hours) from after the 24th week of gestation (3rd visit)⁴⁴³. The Australian Three Centre Consensus guidelines stipulate that midwives and doctors should offer information, consistent advice, clear explanations, and provide women with an opportunity to ask questions at each antenatal visit. Also, women should be offered the option of carrying a copy of their antenatal record⁴⁴⁴.

Pregnant women in the UK are also offered a second screening for anaemia and atypical red-cell alloantibodies in week 28 (4th visit), whereas the results of these tests are discussed with the pregnant women in week 31 (5th visit) and 34 (6th visit)⁴⁴⁵. Women who are initially tested as rhesus D-negative, are offered a first anti-D prophylaxis at week 28 based on UK guidelines⁴⁴⁶ and Swiss guidelines⁴⁴⁷ (4th visit) and in between week 26 to 30 (4th visit) according to South Australian guidelines⁴⁴⁸, while a second dose is administered at week 34 (6th visit) according to UK guidelines⁴⁴⁹ and Swiss guidelines⁴⁵⁰ and during week 34 to 36 (6th visit) following South Australian guidelines⁴⁵¹. A further Coombs test for all pregnant women whether RH-positive or RH-negative in the 24th to 27th week of pregnancy is stipulated in German guidelines. In case no Anti-D-antibodies are detectable in RH-negative individuals, pregnant women in Germany receive an injection of 300 micrograms of anti-D-immunoglobulin during the 28th to 30th week of gestation⁴⁵².

Pregnant women in Germany receive a hepatitis B surface antigen test, after the 32nd week of gestation in case no test immunity is documented (e.g. through vaccination)⁴⁵³. German guidelines also recommend repeating the test for rubella during the 16th to 17th week of gestation.

South Australia⁴⁵⁴ and Kaiser Permanente⁴⁵⁵ guidelines recommend a second complete blood count and a test for gestational diabetes between the 26th and the 30th week (4th visit) of gestation and

⁴³¹ Kaiser Permanente 1999a

⁴³² Department of Health 2005f

⁴³³ National Collaborating Centre for Women’s and Children’s Health 2008

⁴³⁴ Bundesausschuß der Ärzte und Krankenkassen 2008a

⁴³⁵ Swissmom 2003

⁴³⁶ Minister of Public Works and Government Services 2000c

⁴³⁷ Department of Health 2005f

⁴³⁸ Kaiser Permanente 1999e

⁴³⁹ Bundesausschuß der Ärzte und Krankenkassen 2008a

⁴⁴⁰ Horner & Hösli 2004

⁴⁴¹ National Collaborating Centre for Women’s and Children’s Health 2008

⁴⁴² Bundesausschuß der Ärzte und Krankenkassen 2008a

⁴⁴³ Department of Health 2005f

⁴⁴⁴ Mercy Hospital for Women, Southern Health and Women’s & Children’s Health 2001

⁴⁴⁵ National Collaborating Centre for Women’s and Children’s Health 2008

⁴⁴⁶ National Collaborating Centre for Women’s and Children’s Health 2008

⁴⁴⁷ Horner & Hösli 2004

⁴⁴⁸ Department of Health 2005e

⁴⁴⁹ National Collaborating Centre for Women’s and Children’s Health 2008

⁴⁵⁰ Horner & Hösli 2004

⁴⁵¹ Department of Health 2005e

⁴⁵² Bundesausschuß der Ärzte und Krankenkassen 2008a

⁴⁵³ Bundesausschuß der Ärzte und Krankenkassen 2008a

between the 24th and the 28th week (5th visit) of gestation respectively. Moreover, South Australian guidelines advise pregnant women to undergo an antibody screening during the 26th and 30th week⁴⁵⁶. Kaiser Permanente suggest a second anaemia test during the 24th and 28th week⁴⁵⁷, while Swiss guidelines recommend testing for anaemia in the 25th (3rd visit), 28th (4th visit) and 34th (6th visit) week of gestation⁴⁵⁸.

All pregnant women should be offered expanded alpha-fetoprotein testing latest by the 16th to 20th week (3rd visit) of gestation following Kaiser Permanente guidelines⁴⁵⁹. Based on Kaiser Permanente guidelines, chorionic villus sampling, as well as amniocentesis, is regarded as an optional investigation for pregnant women between the 15th and 20th week (2nd visit) of gestation and should only be undertaken after an expanded alpha-fetoprotein test has been performed⁴⁶⁰. Canada offers maternal serum marker screening (alpha fetoprotein, human chorionic gonadotrophin, and unconjugated estriol) to women at 16 or 18 weeks of gestation. Particular emphasis is placed on educating women about the implications and consequences of the test. A maternal serum marker test is usually followed by a fetal age ultrasound in the case of a positive result for Down’s syndrome or a repeated test followed by an ultrasound in case of a positive result for spina bifida⁴⁶¹.

The UK guidelines only recommend screening for placenta previa at week 32 to women whose placenta extends over the internal cervical os. A transvaginal scan should be offered, in case the results from the transabdominal scan appear to be unclear. Before or at the 36th week of gestation (7th visit) the position of the baby should be checked and in case of a breech presentation an external cephalic version should be offered to these women (at 37 weeks, exceptions include women in labour and women with a uterine scar or abnormality, fetal compromise, ruptured membranes, vaginal bleeding and further medical conditions). At the 36th week the pregnant women should receive information about breastfeeding and important postnatal care for herself and the baby. The UK guidelines further recommend giving women advice on the management of prolonged pregnancy by the 38th week of gestation (8th visit) while further discussing the topic in the 40th week (9th visit)⁴⁶².

During the 36th (6th visit)⁴⁶³ and 38th week (7th week) an additional pelvic exam should be administered to pregnant women according to Kaiser Permanente guidelines, while the exam in the 38th week should be accompanied by a check of the pelvic station and the cervix for effacement and dilation⁴⁶⁴.

An induction of labour shall be offered to pregnant women in the 41st week (10th visit) of gestation according to UK⁴⁶⁵, South Australian⁴⁶⁶ and Swiss guidelines⁴⁶⁷ and during the 39th and 40th week (8th visit) according to Kaiser Permanente guidelines⁴⁶⁸. UK guidelines additionally offer women a membrane sweep at the 41st week of labour (10th visit) and increased monitoring (at least twice-weekly cardiotocography and ultrasound examination of maximum amniotic pool depth) from the 42nd week on, should pregnant women decline the induction if labour⁴⁶⁹.

4.6 Ultrasound

The number of ultrasound exams offered to pregnant women in the case study countries varies between one and three.

Based on Swiss guidelines, two fetal ultrasound exams are recommended and covered by the statutory health insurance. The 1st ultrasound examination should take place between the 11th and the 14th week of gestation and should be followed by a second exam between the 20th and 23rd week of gestation.

⁴⁵⁴ Department of Health 2005e

⁴⁵⁵ Kaiser Permanente 1999d

⁴⁵⁶ Department of Health 2005e

⁴⁵⁷ Kaiser Permanente 1999d

⁴⁵⁸ Horner & Hösli 2004

⁴⁵⁹ Kaiser Permanente 1999b

⁴⁶⁰ Kaiser Permanente 1999a

⁴⁶¹ Minister of Public Works and Government Services 2000c

⁴⁶² National Collaborating Centre for Women’s and Children’s Health 2008

⁴⁶³ Kaiser Permanente 1999g

⁴⁶⁴ Kaiser Permanente 1999h

⁴⁶⁵ National Collaborating Centre for Women’s and Children’s Health 2008

⁴⁶⁶ Department of Health 2005e

⁴⁶⁷ Horner & Hösli 2004

⁴⁶⁸ Kaiser Permanente 1999i

⁴⁶⁹ National Collaborating Centre for Women’s and Children’s Health 2008

Ultrasound investigations are only to be conducted by doctors who have a completed training in ultrasound application.⁴⁷⁰ During these investigations clinical data regarding the amniotic sac, crown–rump measurement, biparietal diameter, head circumference, transverse thorax diameter and femur length are recorded⁴⁷¹.

UK guidelines state that women should be offered an early ultrasound scan for gestational age assessment and an ultrasound screening for structural anomalies. The ultrasound scan to determine gestational age should be scheduled between 10 weeks and 13 weeks 6 days of gestation and measure the crown–rump length as well as the head circumference if crown–rump length is above 84 mm. Following the pregnant women’s choice an ultrasound scan to detect structural anomalies should be performed between 18 weeks and 20 weeks 6 days of gestation. For a woman whose placenta extends across the internal cervical os, another scan at 32 weeks should be offered.⁴⁷²

German guidelines recommend three ultrasound screenings using brightness modulation technique. The first scan should be undertaken between the beginning of 9th and the end of the 12th week of gestation and is intended to determine and visualize the intrauterine position of the embryo, to detect potential, (monochorial) multiple birth, measure gestational age and to investigate the fetal heart reaction. Biometric data taken at this scan include the crown-rump length and the biparietal diameter⁴⁷³. The second and third scan should be done between the beginning of the 19th and the end of the 22nd week and between the 29th and 32nd week of gestation, respectively. These scans record the vital signs of the embryo, the gestational age and aim to detect potential multiple birth. Biometric data taken include the biparietal diameter, the fronto-occipital diameter or the head circumference, the abdomen/thorax diameter or the abdomen/thorax circumference, as well as the femur or the humerus length. Particular attention is given to signs of potential development anomalies by measuring the volume of amniotic fluid, the fetal body growth, structure, heart reaction and movements as well as the placenta allocation and structure.⁴⁷⁴

Kaiser Permanente offers pregnant women up to three fetal ultrasounds, one in each of the three trimesters of pregnancy. These are done to estimate the gestational age and the risk of a chromosome defect, to check for birth defects and multiple pregnancies (1st trimester), and to determine the position of the fetus, the placenta and the amniotic fluid volume. Transvaginal ultrasound is occasionally offered to women late in pregnancy to determine the location of the placenta, or in a high-risk pregnancy to monitor the length of the cervix⁴⁷⁵.

According to South Australian guidelines, a morphology ultrasound to detect abnormalities should be scheduled between gestational weeks 18 to 20⁴⁷⁶.

Canadian guidelines regard routine ultrasound screening during pregnancy as controversial and stipulate that women should be offered an ultrasound examination around 18 to 19 weeks of gestation to detect potential multiple pregnancies. According to Canadian guidelines, the evidence that ultrasound improves substantive clinical outcomes detecting congenital anomalies is missing⁴⁷⁷.

4.7 Screening for toxoplasmosis

Swiss guidelines state that an antibody test may be conducted at the beginning of gestation⁴⁷⁸, while the University hospital in Basel recommends scheduling a test between the 12th and 13th week of gestation⁴⁷⁹. In case of a negative result, pregnant women are given counselling and advice on food hygiene and appropriate hygienic precautions when having contact with pets.⁴⁸⁰ In case of a lack of immunization against toxoplasmosis, women are advised to repeat the test every four weeks between 16th and 32nd week of gestation to ensure the timely detection of a potential infection⁴⁸¹.

⁴⁷⁰ Das Eidgenössische Departement des Innern 2008

⁴⁷¹ Swissmom 2003

⁴⁷² National Collaborating Centre for Women’s and Children’s Health 2008

⁴⁷³ Bundesausschuß der Ärzte und Krankenkassen 2008a

⁴⁷⁴ Bundesausschuß der Ärzte und Krankenkassen 2008a

⁴⁷⁵ Kaiser Permanente 2008b

⁴⁷⁶ Department of Health 2005e

⁴⁷⁷ Minister of Public Works and Government Services 2000c

⁴⁷⁸ Swissmom 2003

⁴⁷⁹ Horner & Hösli 2004

⁴⁸⁰ Swissmom 2003

⁴⁸¹ Swissmom 2003

According to UK⁴⁸², South Australian Department of Health⁴⁸³ and Kaiser Permanente⁴⁸⁴ guidelines toxoplasmosis screening is not routinely offered to pregnant women. The UK guidelines further state that the risks of screening may outweigh the potential benefits. German guidelines suggest serology only in case of a justified suspicion of toxoplasmosis infection⁴⁸⁵.

Following UK⁴⁸⁶ and South Australian⁴⁸⁷ guidelines, pregnant women are given information about primary prevention measures to avoid toxoplasmosis infection, such as to avoid raw and undercooked meat and apply appropriate food and hand hygiene, particularly when handling cat litter or gardening.

South Australian perinatal care guidelines advise serological tests (IgG and IgM antibodies to *Toxoplasma gondii*) for pregnant women presenting with symptoms of acute toxoplasmosis (e.g. malaise, fever, lymphadenopathy)⁴⁸⁸.

Kaiser Permanente suggests that pregnant women who are concerned about possibly having contracted toxoplasmosis or are at an increased risk of doing so, should be offered an antibody test, which needs to be repeated after two to three weeks, in case infection symptoms are found. Amniocentesis and a subsequent polymerase chain reaction test as well as a fetal ultrasound are additionally mentioned as means of investigation of a potential toxoplasmosis infection⁴⁸⁹.

No reference to toxoplasmosis screening is made in the Canadian guidelines.⁴⁹⁰

4.8 Screening for group B streptococcus (GBS)

Canadian⁴⁹¹ and Australian⁴⁹² guidelines as well as medical advice from the German Union of Midwives⁴⁹³ recommend the uptake of prevention strategies for GBS onset and suggest either bacteriological screening protocols or risk based assessments. In the first method, pregnant women should universally be screened at 35 to 37 weeks of gestation, using a single, combined vaginal-anorectal swab. An intrapartum chemoprophylaxis should be offered to women who are GBS-colonized (Canada only)⁴⁹⁴. The second path suggests no universal screening, but intrapartum chemoprophylaxis for women (identified by Canadian guidelines) with identified risk factors such as preterm labour, term labour, prolonged rupture of membranes and maternal fever during labour⁴⁹⁵.

UK⁴⁹⁶, Kaiser Permanente⁴⁹⁷ and Swiss⁴⁹⁸ guidelines recommend that pregnant women should not be offered routine antenatal screening for group B streptococcus. In case a GBS screening test is conducted, Swiss guidelines and Kaiser Permanente⁴⁹⁹ refer to the 35th to 37th week of gestation as an appropriate time frame⁵⁰⁰.

4.9 Screening for syphilis

Syphilis screening tests are routinely conducted in the UK (1st visit)⁵⁰¹, at Kaiser Permanente (1st visit)⁵⁰², in Canada⁵⁰³, Australia (1st visit, ideally prior to 16 weeks of gestation)⁵⁰⁴, Switzerland (1st visit, at 12th to 13th week of pregnancy in the University Hospital Basel)⁵⁰⁵ and Germany (at 1st visit

⁴⁸² National Collaborating Centre for Women’s and Children’s Health 2008

⁴⁸³ Department of Health 2005d

⁴⁸⁴ Kaiser Permanente 2008a

⁴⁸⁵ Bundesausschuß der Ärzte und Krankenkassen 2008a

⁴⁸⁶ National Collaborating Centre for Women’s and Children’s Health 2008

⁴⁸⁷ Department of Health 2005d

⁴⁸⁸ Department of Health 2005d

⁴⁸⁹ Kaiser Permanente 2008a

⁴⁹⁰ Minister of Public Works and Government Services 2000c

⁴⁹¹ Minister of Public Works and Government Services 2000c

⁴⁹² Mercy Hospital for Women, Southern Health and Women’s & Children’s Health 2001

⁴⁹³ Bund Deutscher Hebammen e.V. 2004

⁴⁹⁴ Minister of Public Works and Government Services 2000c

⁴⁹⁵ Minister of Public Works and Government Services 2000c

⁴⁹⁶ National Collaborating Centre for Women’s and Children’s Health 2008

⁴⁹⁷ Kaiser Permanente 1999a

⁴⁹⁸ Horner & Hösli 2004

⁴⁹⁹ Kaiser Permanente 1999a

⁵⁰⁰ Horner & Hösli 2004

⁵⁰¹ National Collaborating Centre for Women’s and Children’s Health 2008

⁵⁰² Kaiser Permanente 1999a

⁵⁰³ Public Health Agency of Canada 2007

⁵⁰⁴ Mercy Hospital for Women, Southern Health and Women’s & Children’s Health 2001

⁵⁰⁵ Horner & Hösli 2004

using a Syphilis treponema-pallidum-hemagglutination-assay with further serology of the same blood serum if positive).

4.10 Screening for gestational diabetes mellitus

Australian Three Centres consensus guidelines suggest, that due to the lack of high level evidence to either support or abandon the practice of screening for gestational diabetes mellitus (GDM), midwives and doctors may reasonably: a) not offer screening, b) selectively offer screening to all women with risk factors, or c) offer screening to all pregnant women.

If women agree, then GDM screening should be done between the 24th and 28th week of gestation a good practice would incorporate applying a 75g oral glucose tolerance test (oGTT)⁵⁰⁶.

Swiss guidelines (University Hospital Basel) recommend an oGTT 50mg at around the 28th week of gestation (4th visit)⁵⁰⁷.

UK guidelines suggest testing high-risk women for gestational diabetes mellitus at the first appointment. Pregnant women with a body mass index above 30 kg/m², a previous macrosomic baby weighing 4.5 kg or above, previous gestational diabetes, a family history of diabetes (first-degree relative with diabetes) or a family origin with a high prevalence of diabetes (especially South Asian, Black Caribbean and Middle Eastern origin) are at an increased risk of pre-eclampsia and gestational diabetes according to UK guidelines. Screening for gestational diabetes using fasting plasma glucose, random blood glucose, glucose challenge test and urinalysis for glucose is counter-advised⁵⁰⁸.

Guidelines from the German Union of Midwives recommend an oGTT for nulliparous in the first trimester of pregnancy in case of adipositas (body mass index >27) or a family history of diabetes⁵⁰⁹.

Canadian guidelines refrain from broad recommendations regarding GDM screening for pregnant women⁵¹⁰.

4.11 Screening for Down’s syndrome

According to UK guidelines a combined test (nuchal translucency, beta-human chorionic gonadotropin, pregnancy associated plasma protein-A) should be offered to women to screen for Down’s syndrome between 11 weeks and 13 weeks 6 days. For women who book later in pregnancy the serum screening test (triple or quadruple test) should be offered between 15 and 20 weeks of gestation. Furthermore, UK guidelines mention that, when it is not possible to measure nuchal translucency owing to fetal position or raised body mass index, women should be offered serum screening (triple or quadruple test) between 15 weeks and 20 weeks of gestation. The routine anomaly scan (at 18 weeks to 20 weeks 6 days) should not be routinely used for Down’s syndrome screening using soft markers. Women should be given information (screening pathways, balanced and accurate information about Down’s syndrome) about screening for Down’s syndrome at the first contact with the health professional. In case of a positive screening result women should have rapid access to appropriate counselling.⁵¹¹

Australian Three Centres Consensus guidelines mention under good practice that nuchal translucency screening should be performed between 11 and 14 weeks’ gestation⁵¹², while Kaiser Permanente recommends 11 to 13 weeks of pregnancy as an appropriate time frame⁵¹³.

4.12 Further guidance on investigations not routinely recommended and optional care

According to UK⁵¹⁴ and Australian Three Centres Consensus guidelines⁵¹⁵ repeated maternal weighing is of no additional clinical effectiveness and, in the case of the UK guidelines, should be reserved to

⁵⁰⁶ Mercy Hospital for Women, Southern Health and Women’s & Children’s Health 2001

⁵⁰⁷ Horner & Hösli 2004

⁵⁰⁸ National Collaborating Centre for Women’s and Children’s Health 2008

⁵⁰⁹ Bund Deutscher Hebammen e.V. 2004

⁵¹⁰ Minister of Public Works and Government Services 2000c

⁵¹¹ National Collaborating Centre for Women’s and Children’s Health 2008

⁵¹² Mercy Hospital for Women, Southern Health and Women’s & Children’s Health 2001

⁵¹³ Kaiser Permanente 2008c

⁵¹⁴ National Collaborating Centre for Women’s and Children’s Health 2008

⁵¹⁵ Mercy Hospital for Women, Southern Health and Women’s & Children’s Health 2001

circumstances where clinical management is likely to be influenced⁵¹⁶. Moreover, routine screening for Chlamydia, cytomegalovirus, hepatitis C virus, bacterial vaginosis, and preterm labour should not be offered to pregnant women in the UK. Ultrasound estimation of fetal size for suspected large-for-gestational-age unborn babies and routine breast examinations are also counter-advised. Routine formal fetal-movement counting, auscultation of the fetal heart and ultrasound scanning after 24 weeks of gestation are also explicitly not recommended⁵¹⁷.

Based on reviewed guidelines from the UK⁵¹⁸, Germany⁵¹⁹ and Switzerland⁵²⁰ routine Doppler ultrasound examination in low-risk pregnancies is counter-advised. Also, these countries do not recommend routine antenatal electronic cardiotocography^{521,522,523}. Canadian guidelines specify the lack of conclusive evidence proving that ultrasound improves substantive clinical outcomes⁵²⁴.

The UK guidelines state that pelvic examinations should not be routinely offered to pregnant women⁵²⁵. Swiss guidelines recommend refraining from repeated vaginal examinations⁵²⁶, and recommendations from the German Union of Midwives also counter-advise routine vaginal examinations of pregnant women⁵²⁷.

In addition measurement of the pregnant women’s abdominal girth, testing urine for glucose and sonographic measurement of the cervix are not advisable according to Swiss guidelines⁵²⁸.

Amniocentesis and chorionic villus sampling are, according to Swiss guidelines, only recommended after a thorough medical consultation and only for women aged older than 35 years or presenting with an explicit risk indicating these investigations.

UK guidelines state that routine screening for cardiac anomalies using nuchal translucency is not recommended. When routine ultrasound screening is performed to detect neural tube defects, alpha-fetoprotein testing is not required. The UK guidelines recommend refraining from routine assessment of presentation by abdominal palpation before 36 weeks, as it is perceived to be not always accurate and potentially uncomfortable⁵²⁹.

⁵¹⁶ National Collaborating Centre for Women’s and Children’s Health 2008

⁵¹⁷ National Collaborating Centre for Women’s and Children’s Health 2008

⁵¹⁸ National Collaborating Centre for Women’s and Children’s Health 2008

⁵¹⁹ Bundesausschuß der Ärzte und Krankenkassen 2008a

⁵²⁰ Das Eidgenössische Departement des Innern 2008

⁵²¹ National Collaborating Centre for Women’s and Children’s Health 2008

⁵²² Bundesausschuß der Ärzte und Krankenkassen 2008a

⁵²³ Horner & Hösli 2004

⁵²⁴ Minister of Public Works and Government Services 2000c

⁵²⁵ National Collaborating Centre for Women’s and Children’s Health 2008

⁵²⁶ Horner & Hösli 2004

⁵²⁷ Bund Deutscher Hebammen e.V 2004

⁵²⁸ Horner & Hösli 2004

⁵²⁹ National Collaborating Centre for Women’s and Children’s Health 2008

5. Cost-effectiveness and clinical outcomes

The following section comprises results obtained through a literature review targeted at identifying evidence of antenatal care interventions which are found to be not cost-effective, including screenings and tests. Particular emphasis was placed on the context of the reviewed studies, in order to allow the study results to fit into the settings of at least one of the reviewed countries within this report.

5.1 Frequency of antenatal visits

A systematic review by Villar et al. (2001) attempted to determine the clinical outcomes of lowering the frequency of antenatal visits, by reviewing results from ten trials with 60,000 women.

Evidence from the systematic review suggests that a lower number of antenatal visits is not associated with a decrease in perinatal outcomes for low-risk pregnancies. Following the recommendations of the systematic review, it was determined that four antenatal visits appear to be the minimum number required to achieve good clinical effectiveness. However, lowering the number of antenatal visits may be associated with lower satisfaction for pregnant women. Furthermore, this study suggests that care administered by a midwife/general practitioner showed comparable clinical outcomes with obstetrician/gynaecologist-led care⁵³⁰.

5.2 Antenatal screening for Down’s syndrome

A modelling study (based on a screening programme with 10,000 pregnant women conducted in 1995 in England and Wales) assessed the effects, safety, and cost-effectiveness of first and second trimester Down’s syndrome screening strategies.

The study found that the following tests prove to be efficient, safe and cost-effective methods - integrated test (first semester: nuchal translucency, PAPP-A; second semester: quadruple test), first trimester screening, the combined test (nuchal translucency, PAPP-A, HCG), the quadruple test (AFP, HCG, unconjugated oestriol (uE3), inhibin A), or nuchal translucency. On the other hand, screening based on maternal age, second trimester double test (PAPP-A, HCG), and first trimester serum test were found to be less effective, less safe and more costly in comparison to the other four methods.⁵³¹

5.3 Antenatal screening for factor V Leiden mutation

A UK prospective, unselected study assessed the cost-effectiveness of antenatal screening for factor V Leiden mutation in pregnant women. This mutation is associated with vascular complications in pregnancy. Participants of the Glasgow outcome, activated protein C resistance (APCR) and Lipid (GOAL) pregnancy study were included. 967 women who attended antenatal care visits during the GOAL study were selected for participation the factor V Leiden mutation study.

A subsequent economic evaluation showed that anticoagulant prophylaxis, which was associated with a 50% reduction in vascular complication, resulted in an additional management cost of £3,768 for selective screening and of £39,841 for universal screening. Outcome analysis showed a prevention of less than one vascular event for selective screening and less than three events for universal screening. Thus, it was concluded that neither selective nor universal screening for factor V Leiden mutation proved to be cost-effective.⁵³²

5.4 Routine antenatal hepatitis C virus screening

Plunkett and Grobman (2005) conducted a cost-effectiveness analysis for routine hepatitis C virus (HCV) screening in the American perinatal care setting. For the analysis, a decision tree with a Markov model was developed comparing three approaches to handle asymptomatic HCV infection in low-risk pregnant women: (1) no HCV screening, (2) HCV screening and subsequent treatment for progressive disease, and (3) HCV screening, subsequent treatment for progressive disease, and elective caesarean delivery to avert perinatal transmission. The screened population included asymptomatic HIV negative pregnant women, without risk factors for HCV infection, who received

⁵³⁰ Villar et al. 2001

⁵³¹ Gilbert et al. 2001

⁵³² Clark et al. 2002

routine prenatal care in the United States. For the assessment 10,000 simulations were run. As outcome measures the lifetime costs and quality-adjusted life years (QALYs) were evaluated for mother and child.

In the base case, HCV screening and subsequent treatment of progressive disease was dominated (more costly and less effective) by no screening, with an incremental cost of \$108 and a decreased incremental effectiveness of 0.00011 QALYs. When compared with no screening, the marginal cost and effectiveness of screening, treatment, and caesarean delivery was \$117 and 0.00010 QALYs, respectively, which yields a cost-effectiveness ratio of \$1,170,000 per QALY. Thus, the researchers concluded that routine HCV screening is not cost-effective. Nevertheless, concerns were raised regarding the limited information on the natural history of HCV infection in the paediatric population and the available utility values for HCV-related health states.⁵³³

5.5 Routine antenatal screening for maternal herpes simplex virus–1 and –2 antibodies

In 2004, Thung and Grobman conducted a study to determine the cost-effectiveness of routine antenatal screening for herpes simplex virus 1 and 2 (HSV-1 and HSV-2) in women without a known history of genital herpes. Decision analysis was used to compare three treatment strategies to prevent neonatal herpes infection in women without a known history of genital HSV: (1) the current standard of care (no HSV screening), (2) antepartum HSV-1 and HSV-2 antibody screening of the pregnant woman and her male partner with appropriate counselling, and (3) antepartum HSV-1 and HSV-2 antibody screening with appropriate counselling and acyclovir prophylaxis at 36 weeks of gestation in seropositive women.

For a cohort of 100,000 women and for each strategy, the incidence of neonatal HSV infection, the associated long-term neurologic deficits (mild, moderate, or severe) and death, and the direct costs to the health care system were calculated. The primary outcome of the cost-effectiveness study was measured by the marginal cost per quality adjusted life-year (QALY) gained.

The employed model predicts that using current guidelines, 1 of 5,469 women will have a herpes-infected neonate. Strategy 2 and 3 cost \$5,812,819 and \$4,130,297, respectively, for every significant neurologic sequela or death prevented. The cost-effectiveness of these strategies, expressed as cost per QALY gained, was \$219,513 and \$155,988, respectively. Taking into account the limitations due to the availability of high quality data on neonatal infection rates and medical costs, it was concluded that routine antenatal screening for maternal HSV-1 and HSV-2 antibodies is not cost-effective.⁵³⁴

5.6 Routine antenatal varicella screening

A study conducted by Glantz and Mushlin (1998) aimed at determining the potential cost-effectiveness of routine antenatal varicella serologic screening of pregnant women with negative or indeterminate varicella histories in the context of the United States. A decision analytic model was used to evaluate routine antenatal varicella screening. Varicella cases, deaths and life-years gained were used as outcomes.

The results indicate that routine antenatal varicella screening of history-negative women was not cost-effective unless the cost of screening was decreased to a sixth, varicella exposure rates were greater than 6%, or there was a greater than three-fold decrease in varicella exposure in women testing non-immune compared to unscreened women. Also, the conclusion of not cost-effective would not hold if the screening was restricted to women with increased exposure risk, or if the screening formed part of a larger policy which additionally comprises varicella vaccination of all adults.⁵³⁵

⁵³³ Plunkett & Grobman 2005

⁵³⁴ Thung & Grobman 2005

⁵³⁵ Glantz & Mushlin 1998

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Appendices 1-6: See separate Appendix document

CHAPTER III: RECOMMENDATIONS

Introduction

Recommendations should be viewed in a wider context. Firstly in connection with their effect on the mother-child-pass examination programme (spanning not only antenatal care but also postnatal care and child care) and secondly with regard to their potential impact on overall maternity care in Austria.

Regarding the initiation of follow-up activities from the present case study, it is advised to take a broader public health view in the development of a health orientated strategy towards maternity care. This is in contrast to the current medical emphasis on health services for pregnant women and their children in Austria. The medical focus and limited view of maternity care is partially due to this area largely being restricted to the mother-child-pass examination programme which is outlined in the mother-child-pass booklet and involves medical services only.

A broader public health approach would firstly entail considering maternity care issues beyond antenatal care, such as for instance deliveries (e.g. trends of caesarean sections over time) or child care. Also, it would require the involvement of several other policy areas in addition to health, such as social affairs, family matters (child care, child benefits, etc.) and labour market issues (e.g. maternity leave). Thirdly, clear national and regional priorities (e.g. in the form of targets) would be necessary as well as detailing transparent responsibilities and processes.

Fourthly, the needs of pregnant women ought to be identified and additional means for a health orientated strategy for mothers and their children should be developed. Evidence is necessary in order to know what works and what does not. These aforementioned means should not only be medical means, but also include other mechanisms and options which could promote and strengthen the health of mothers and their children (e.g. lifestyle recommendations, health education, etc.).

Fifthly, the current status quo would need to be assessed in order to take the appropriate action; however, this will only be possible following an evaluation of the mother-child-pass-examination data and the entire programme. Implementation of a comprehensive programme for maternity care would require the definition of a communication strategy that encourages the participation of all women. Joint guidelines and standards could be developed to assist structured implementation of a maternity care programme.

A multidisciplinary committee including all main stakeholders could be founded to discuss the findings of the present case study and define priorities for follow-up activities.

Before continuing with the recommendations it is important to be aware that there may not be one gold standard (e.g. for a procedure, the frequency of an intervention, the amount of resources needed, etc.), but instead there may be a number of models or approaches which include appropriate and effective elements.

I General recommendations

Responsibilities

Responsibilities for maternity care with regard to the provision and funding of services should be clearly defined in terms of: who should pay for which services (public/private); where services should be provided (physician practices/hospitals/other); and who is responsible for giving advice to pregnant women (on medical issues, birth preparation and the actual delivery, and on other issues: psychosocial, nutritional, physical activity, choosing the place of delivery, etc.).

Currently the legal responsibility of social health insurance to provide preventative services is limited. Social health insurance funds do however pay for 1/3 of the expenses resulting from the mother-child-pass examination programme.

Social insurance' role with respect to prevention and health promotion should be discussed and could be followed by potential changes of legislation.

A broader health plan for maternity care services could be developed, going beyond only medical services and focusing on the mother-child-pass examination booklet. Such a programme should envision health targets, implementation processes and communication policies.

Communication, Co-operation

Currently only one national board for maternity care exists in Austria, namely the sub-committee of the Supreme Sanitary Council. By being embedded in this structure, the procedures and activities of the committee are barely known to external stakeholders, lack transparency and are not communicated to the public.

Communication on maternity care/antenatal care issues and related processes should be more transparent on a policy-maker level. The mother-child-committee of the Supreme Sanitary Council should be supplemented by a comprehensive public board including all relevant stakeholders/decision-makers (from various levels and interest groups: national level, regional level, social health insurance, physicians, midwives, etc.).

Health services provision

Several guidelines or recommendations on antenatal care/care provided during pregnancy have either been developed in Austria or international guidelines have been adapted to the Austrian circumstances. No overview of all relevant guidelines exists; they are usually published by the individual stakeholder organisations (e.g. medical societies, hospital departments, other societies and associations). It is not known to what extent guidelines are adhered to or whether pregnant women are actually aware of their existence.

Existing guidelines for antenatal care need to be assessed with regard to their quality and need to be updated with current clinical knowledge. They should be consolidated and their existence communicated to potential users.

Services in connection with antenatal screening are often provided in outpatient departments of hospitals where services are mostly reimbursed by a lump sum or in a few cases based on the actual services provided.⁵³⁶ Sometimes services are provided in specialised centres for prenatal diagnostics.

Transfers of patients from physicians in practices to hospitals should be standardised.

Stakeholders involved in the mother-child-pass programme must clearly state their viewpoints with regard to the provision of antenatal screening. If antenatal screening of any kind is provided to mothers the grounds on which it is performed must be clearly defined and supported by evidence.

⁵³⁶ Hofmarcher, M., Rack, H.M. (2006). Health Systems in Transition. Austria. Copenhagen, World Health Organization on behalf of the European Observatory on Health Systems and Policies

Furthermore women have to receive adequate advice to take informed decisions and ought to be supported by adequate follow-up measures.

The number of out-patient cases involving pregnant women could be monitored over time and reimbursement reconsidered.

A newly developed maternity programme should not only focus on medical services but take a broader public health view towards the subject.

Research

Premature birth seems to be one of the greatest challenges of pregnancy in Austria, and regional differences persist.

Further research on premature birth should be conducted, especially looking into time trends and regional differences to determine whether these are based in population differences or health service differences.

Equal access to services should be provided for all pregnant women in Austria. *Further research on social inequalities should be conducted, e.g. looking at differences in health service utilisation/access to examinations of the mother-child-pass examination programme, and identifying the women not participating in the programme (checking for regional differences, migrant background, income, education, etc.).*

Equity issues

The provision of services is often not standardised which means the quality of services provided by individual physicians may vary. The quality of services may also vary depending on various criteria, e.g. the physician’s time constraints. Quality of services provided could be ensured by *gynaecological guidelines and regulations*. Thereby a defined state of the art should be achieved.

Socially disadvantaged groups may have problems accessing services (e.g. due to not having sufficient information, not speaking German, or not attaching a high priority to health services). *This aspect ought to be subject of further research so that disadvantaged groups can be identified and addressed adequately. Standards and guidelines should be promoted and emphasise equal access.*

At present, the mother-child-pass booklet is only available in German. Mothers who are not proficient in German may have difficulties following the examination programme and understanding the documented treatment results. *The main aspects of the mother-child-pass could be provided in translated versions (e.g. double headings). Also, information on maternity services should be available in different languages. If required, translation services ought to be provided.*

II Recommendations regarding the Austrian mother-child-pass examination programme (Addressing antenatal care only)

General recommendations

Health professionals

The Austrian mother-child-pass examination programme is physician-focused. Nurses are at present not involved in health promotion and public health activities. They are often not present at deliveries and only involved in antenatal care to a very minor extent. This is due to the fact that the large majority of nurses only work in the inpatient setting. Models applied in other countries show a stronger involvement of various types of health professionals. Furthermore, the mother-child-pass examination programme does not include any services of midwives⁵³⁷. Midwives are generally not assigned a central role in public health-related maternity services. Pregnant women, especially primipara, may find it very comforting to spend some time with a midwife answering their questions regarding the delivery and reducing their fears.

The involvement of other health professionals (e.g. midwives, nurses and psychologists) in public health services in general, and specifically in maternity and child services and the mother-child-pass examination programme, should be discussed. For this purpose a taskforce could be established. Models applied in other countries should be assessed and used as best-practice examples where appropriate.

Training of midwives has been transferred from schools for professional education to universities of applied sciences.

The future implications of this change should be assessed (if this has not already been done).

The training of nurses in Austria meets the stipulated minimal requirements of the EU (i.e. duration, educational school requirements and professional competences).⁵³⁸ With regard to legislation, nurses have a considerable scope of competences. However most nurses in Austria work in the inpatient setting. One example for another setting in which they are active is domestic home care.

The role of nurses in outpatient care in Austria does not seem to be used to its potential. Further areas of application and career paths could be discussed based on examples from other country settings and on national requirements.

Some pregnant women suffer from medical conditions which may require special attention before, during and after pregnancy. Conditions could for instance be chronic illnesses (e.g. high blood pressure, diabetes, asthma, etc.) or mental illnesses.

These women could be identified and addressed specifically by case management approaches thereby ensuring that involved health providers (e.g. gynaecologist and psychiatrist) co-operate closely with each other and the patient (e.g. with regard to medication, risk factors, prevention and health promotion activities).

Treatment may vary depending on the health professional providing it. Also the time and attention devoted to the individual patient can vary among physicians. Influencing aspects can for instance be: age, experience, place of training, time available or work setting of the physician.

Towards the provision of more consistent care, physicians should be supported by clinical guidelines.

⁵³⁷ Nurses and midwives are different professions in Austria. They in most cases still undergo different training (partially still nursing school (see next footnote for update) vs. university of applied sciences) and applicants have to meet diverse entry requirements.

⁵³⁸ Recently the legislation basis has been created to provide training for nurses at universities of applied science. Only few regions have taken this option up so far and offer programmes. Implications of this change are highly complex in many ways and require further discussion.

Reimbursement

Issues concerning reimbursement are key arguments in discussions about changes in the mother-child-pass-examination programme. This is also based in the fragmented funding structure existing in Austria.

Discussions in connection with changes of the mother-child-pass programme should be transparent and have the wellbeing of the mother and her child at their centre. Involved parties should clearly state their future aims and strategies for maternity and child care. These should be based on sound evidence rather than being dominated by reimbursement or political motivations.

Currently about half of social health insurance expenditures for services provided in the course of the mother-child-pass examination programme are not subject to uniform national tariffs. This mostly applies to the basic reimbursement of the physician, laboratory test and ultrasound examinations.

Discussion toward setting common national tariffs could be re-initiated (based on discussions in 1996).

Communication, Co-operation

Revisions of the mother-child-pass examination programme do not follow a standardised procedure and lack transparency. Changes in the mother-child-pass examination programme are not communicated to social health insurance or health service providers in a standardised way.

Communication with regard to amendments of maternity care services in general and the mother-child-pass examination programme specifically should be improved, such that all relevant stakeholders are informed

- *Social health insurance should, as a major payer, be included in discussions; any planned changes should be talked over with social insurance representatives with respect to their potential implications on social health insurance expenditures and overall health expenditure (FLAF, Family Burden’s Equalisation Fund).*
- *Health service providers must be informed in a timely manner about changes to the mother-child-pass examination programme, the mother-child pass booklet or reimbursement catalogues and about potential implications that these entail for their work.*
- *Mothers affected by these changes should also be informed in an appropriate manner.*

Health services provision

It is not clear as to whether the current mother-child-pass examination programme reflects state of the art medicine or international standards.

Health services provided to pregnant women should be supported by evidence and be accompanied by clinical guidelines.

At present the mother-child-pass examination programme only lists the services which are to be provided. No specification/description of how they ought to be provided is given.

Health services of the mother-child-examination programme should be defined more closely, also referral requirements ought to be standardised to the extent possible.

Documentation, IT

No comprehensive electronic version of the mother-child-pass examination programme exists. Electronic data are spread among the various providers visited by the pregnant woman, information in the mother-child-pass (test results, examination results) are filled out in handwriting by the attending physician.

The complete mother-child-pass should be available in the form of an electronic file which could be accessed by the relevant health providers and the patient (parts of it by social health insurance: for billing/granting of child-care benefit).

Currently social insurance funds cannot identify which curative services⁵³⁹ are provided in connection with maternity care. This is only possible for laboratory services of the regional health insurance fund of Vienna.

Social health insurance funds could ensure that any curative services provided by their contract providers are coded in a way making them identifiable as services provided in connection with maternity care. The definition of a completely universal benefits package seems unlikely (especially due to different reimbursement of the basic reimbursement of physicians).

Social health insurance would have to distinguish between:

- Services provided as part of the mother-child pass examination programme
- Services provided within the insured event of maternity
- Services provided to pregnant women in the course of the insured event of illness

Social insurance will have to be prepared to be confronted with physicians demanding higher fees because of additional administration.

At present, the Hauptverband reports the amount of services provided within the mother-child-pass examination programme to the Ministry of Health on a social health insurance fund level. Data from the cross-regional/national social insurance funds is reported only on an aggregate level, not a regional level.

Regional data should also be made available as these would enable assessing regional differences in utilisation and participation rates.

Revisions and changes of the mother-child-pass examination programme

Currently revisions of the mother-child-pass examination programme do not follow a standardised procedure.

Revisions should take place in a standardised and transparent manner. Regular meetings (e.g. twice a year) should be held. (Please also refer to the section on “Communication, Co-operation”).

In Austria benefit catalogues of social health insurance funds and also the examination programme of the mother-child pass programme tend to be extended by adding new benefits instead of actually revising the entire catalogue. The addition of new services appears to be tolerated more easily whereas the removal of services poses a considerable challenge. For the introduction of new benefits assessments and evidence are increasingly taken into consideration. However hardly any assessments are performed which take a wider view, e.g. looking at the entire scope of a programme (e.g. mother-child pass programme), at complementary or substitutive services or at the potential removal of obsolete or ineffective services.

Periodic revisions of services provided and their cost-effectiveness should be undertaken. Thereby not only new services should be assessed with regard to their suitability but assessments should also assume a broader perspective by reviewing the entire scope and mixture of services provided.

Suggestions to change the examination programme, involving the inclusion/exclusion of certain items, should be transparent and supported by evidence.

Revisions should not be limited to effects on the mother-child-pass examination programme, but take a broader public health and health promotion view as well as taking consideration of potentially relevant outcomes for maternity care in general.

Evaluation

The mother-child-pass-examination programme has existed for more than 30 years and has never been evaluated nor have outcomes been assessed.

An evaluation is encouraged in order to find out about the quality of the programme which could involve various aspects:

- *Evaluation of the examination programme to determine whether the examinations and the structure of the examination programme are in line with international evidence and good practice*

⁵³⁹ Services reimbursed according to the curative reimbursement catalogue

(using defined indicators, e.g., the number and timing of examinations, the number and timing of ultrasound examinations, laboratory tests, child examinations, etc.).

- *Evaluation of the utilization patterns to determine the potential impact on the population, and whether the mother-child-examination programme is well accepted (based on attendance rates and the reasons for attendance, e.g. feeling of safety, continuity of care, building of awareness for health, acquisition of knowledge about pregnancy and development of the child, etc.) as well as developing measures to increase attendance rates, especially for examinations of children.*
- *Assessment and critical revision of potential over- and under-use and the reasons for these.*

An evaluation should take into consideration broader aspects than those covered in the mother-child-pass examination programme, such as:

- *Undertaking a needs assessment to identify the actual needs (medical and non-medical) of pregnant women and women with children.*
- *Assessment of medical and non-medical maternity services provided outside of the mother-child-examination programme.*

Also, it will be important to examine the increasing amount of antenatal screening/diagnostics in Austria (i.e., whether this has been caused by sound medical reasons, advanced technologies, an increase in risk pregnancies, demographic changes – older pregnant women, supplier induced demand).

Pilot projects or initiatives from one region could be evaluated and applied in other regions/by other health insurance funds. These could include: the child bonus of Upper Austria; the smoking cessation programme targeted at pregnant women programme by the regional health insurance fund of Styria; and the initiatives of Vienna, including the telephone hotline, psychosocial counselling, etc.

Structure and contents of antenatal care examinations

Common health problems during pregnancy

As part of the Austrian mother-child-pass examination programme physicians have to perform a comprehensive anamnesis and are obliged to document irregularities occurring during pregnancy. No instructions are given on how irregularities are to be diagnosed and on the relevant follow-up activities which should be undertaken in this context.

The complementary brochure to the mother-child-pass gives advice on the following medical conditions: vaginal discharge, high blood pressure and HELLP syndrome, hair and skin changes, haemorrhoids, varicose veins, backache, stretch marks, pyrosis, constipation, nausea and vomiting and tells women to consult their physician or a hospital when suffering from strong vomiting or experiencing bleeding, contractions or breaking of water.

The international guidelines examined in the report give advice on common health problems during pregnancy. These largely coincide with those mentioned in the Austrian brochure.

Examinations of the Austrian mother-child-pass examination programme should be supported by guidelines and recommendations. The international guidelines should be reviewed to assess comprehensiveness of the symptoms covered in the Austrian brochure. For example, mental health problems occurring during pregnancy could receive more attention in Austria, such that women presenting with a mental illness before pregnancy could receive targeted counselling.

Examination programme

Number of visits: The mother-child-pass examination programme includes five gynaecological examinations (up to the 38th week of pregnancy), one internal examination, three ultrasound examinations and two laboratory examinations during pregnancy.⁵⁴⁰

⁵⁴⁰ As of 1 July 2010 the internal (physical) examination which is currently undertaken between 17th and 20th week of pregnancy should be excluded from the programme. Instead women should be advised to undertake the

International guidelines recommend seven to ten visits. Most include an additional examination in the 10th week of pregnancy and more frequent visits from the 36th week (including in the 40th and 41st week). Based on a systematic review by Villar et al. (2001) four antenatal visits appear to be the minimum number needed to achieve good clinical effectiveness. A lower number of visits can compromise the satisfaction of pregnant women.

The potential to include additional examinations in the 10th, 40th and 41st week of pregnancy could be assessed.

Commonly performed exams and tests, ultrasound examinations:

- Hepatitis B antigen is tested for in Austria between the 25th and the 28th week of pregnancy, while in the countries surveyed it is tested at the initial visit.
- The Austrian examination programme includes HIV testing before the 26th week of pregnancy as an compulsory test (since 1 January 2010). Previously it was an optional test, only to be performed based on medical indication.
- oGTT testing is, since January 2010, to be performed in the course of the laboratory examination undertaken between the 25th and the 28th week of pregnancy. Previously it was an optional test, only to be done based on medical indication.
- Mothers in Austria are tested for syphilis (Lues reaction, TPHA) at the first laboratory examination before the 16th week of pregnancy.
- Another routinely performed test of the Austrian programme is the test for Lues reaction.
- Most international guidelines include regular measurements of blood pressure, testing for proteinuria, symphysis-fundal height, fetal heart auscultation and fetal movements. Test for HIV and syphilis are commonly performed at the first antenatal check-up. Germany and Switzerland also include a glucose and leucozytes urine test.
- Other tests performed according to the guidelines reviewed for individual countries are screening for Chlamydia trachomatis infection (Germany, Canada), screening for asymptomatic bacteriuria (UK, Australia), screening for Down's syndrome and early ultrasound screening (UK, Australia) and screening for varicella zoster antibodies (Germany). Nearly all international guidelines offer genetic counselling to pregnant women.

Deviations between international guidelines and the Austrian examination programme ought to be viewed more closely.

Ultrasound examinations: The examination programme in Austria includes three ultrasound examinations (8th-12th and 18th-22nd and 30-34th week of pregnancy).⁵⁴¹ The number of ultrasound examinations offered to pregnant women in the reviewed international guidelines varies between one and three whereby these are undertaken between the 10th and 32nd week of pregnancy. According to UK guidelines, ultrasound examination of fetal size for suspected large-for-gestational age fetuses is counter-advised. Ultrasound scanning after 24 weeks of gestation is also explicitly not recommended.

precautionary health examination (based on §132b of the General Social Insurance Act and the respective regulations in the other social insurance acts). Based on the amendment of the Mother-Child-Pass Directive in 2008, an additional ultrasound examination, which should be performed between the 8th and the 12th week of pregnancy, will be included in the mother-child-pass examination programme as of 1 January 2010. In October 2009 it was still uncertain whether the above detailed changes were effectively going to be implemented, eventhough the corresponding legislation has already been enacted (2008 amendment of the Mother-child-pass directive). Whereas physicians oppose the exclusion of the internal examination, social insurance does not favour the idea of encouraging pregnant women to undertake a periodic health examination, partially because the examination programme is not intended for the target group of pregnant women but for the general population (18 years and older). Uncertainty about future development prevails but it is aimed to reach an agreement before 2010.

⁵⁴¹ Based on the amendment of the Mother-Child-Pass Directive in 2008, an additional ultrasound examination, which should be performed between the 8th and the 12th week of pregnancy, will be included in the mother-child-pass examination programme as of 1 January 2010

In the UK, Germany and Switzerland routine Doppler ultrasound examinations in low-risk pregnancies are counter-advised.

Evidence for early and late ultrasound screening in Austria could be reviewed.

Rhesus-D prophylaxis: The mother-child-pass examination programme recommends testing the rhesus status of pregnant as part of the first laboratory test up to the 16th week of pregnancy.⁵⁴² For rhesus D-negative women, anti-D-prophylaxis is given at the 28th week of pregnancy. All country guidelines surveyed test the rhesus D status of the women at the first antenatal visit. Women who are initially tested as rhesus D-negative, are offered two anti-D prophylaxis in the UK and Switzerland (at 28 and 34 weeks) and in South Australian guidelines (between week 26 to 30 and week 34 to 36). In Germany, a Coombs test for all pregnant women occurs between the 24th to 27th week of pregnancy. Rhesus D-negative women receive an injection of 300 micrograms of anti-D-immunoglobulin (between week 28 to 30). *Deviations between international guidelines and the Austrian examination programme ought to be viewed more closely.*

Screening for toxoplasmosis: The Austrian examination programme includes routine screening for toxoplasmosis as part of the first laboratory test up to the 16th week of pregnancy and a follow-up examination, if required after the 32nd week of pregnancy. Most of the reviewed international guidelines do not recommend routine screening for toxoplasmosis. Only Switzerland performs an antibody test at the beginning of gestation or alternatively between the 12th and 13th week of gestation. Kaiser Permanente only offers blood tests to concerned women or women who are at increased risk of contracting toxoplasmosis, while South Australian guidelines test women presenting with symptoms of acute toxoplasmosis. The UK guidelines state that the risks of screening may outweigh the potential benefits. In UK and Australian guidelines women are provided with information about measures to avoid toxoplasmosis infection, i.e., to avoid raw and undercooked meat and apply appropriate food and hand hygiene, particularly when handling cat litter or gardening. *Pregnant women should in any case be given information about primary prevention measures. Considering the fact that only few countries routinely screen for toxoplasmosis deviations between international guidelines and the Austrian examination programme ought to be examined. The existing evidence should be viewed more closely and best practice established.*

Screening for group B streptococcus (GBS): Austria has only recently (2008) included an optional screening for B streptococcus as part of the laboratory test undertaken between 25th and 28th week of pregnancy. The screening test was however excluded again from the programme in January 2010..UK, Kaiser Permanente and Swiss guidelines recommend that pregnant women should not be offered routine antenatal screening for group B streptococcus. Canadian and Australian guidelines as well as medical advice from the German Union of Midwives recommend the uptake of prevention strategies for GBS onset and suggest either bacteriological screening protocols or risk based assessments. In case of screening, it is recommended that it takes place between 35th and 37th week of gestation. *Austria’s examination programme could be compared with that recommended by other country guidelines. A working group could be established to discuss best practice in screening procedures.*

Screening for gestational diabetes mellitus: Austria has only recently (1 January 2010) formally included an oGTT test as part of the laboratory test undertaken between 25th and 28th week of pregnancy. Previously it was an optional test, to be performed only based on medical indication. UK guidelines recommend targeted screening of women presenting with risk factors whereas Swiss guidelines and guidelines from the German Union of Midwives recommend performing an oGTT test. Australian guidelines leave it to the discretion of the health provider to decide about screening, Canadian guidelines refrain from broad recommendations of screening. Regarding the time to screen UK guidelines recommend undertaking the test at the first appointment whereas Swiss and Australian guidelines advise to take the test around the 28th week of gestation.

⁵⁴² Based on a statement of a representative of the Ministry of Health (15 May 2009, email correspondence) RH-antibody-search test and Anti-D-prophylaxis are not part of the mother-child-pass examination programme. They are however listed in the 2008 edition. Documentation for this test was modified in the 2009 edition in such a way that an RH-antibody-search test and Anti-D-prophylaxis can only be undertaken based on a medical indication

Practises of Austrian physicians (how often is the test really provided) and international evidence should be closely followed.

Information/Advice given to pregnant women

General

It should be clearly defined who is responsible for providing which information to pregnant women. Provision of information could be stratified based on various aspects:

- *Pregnancy experience of the mother: primipara/no primipara*
- *Risk of the pregnancy: routine pregnancy/risk pregnancy/high risk pregnancy*
- *Place of birth: hospital or birth clinic/home birth*

Diagnosis and treatment related to mother-child-pass examinations should, to the extent possible, be standardised and should follow guidelines.

Information should be available in various languages, if this is not already the case. Standard procedures for dealing with non-German speaking women could be defined.

Religious beliefs of the patient should, to the extent possible, be taken into consideration.

Any oral information provided to the mother during mother-child-pass examinations (e.g. on alcohol, smoking, etc.) should be standardised and based on international evidence.

Lifestyle-related information (most important items)

Austrian women receive standardised lifestyle and pregnancy information in the form of a brochure which is given to them with the mother-child-pass booklet.

Smoking: As part of the mother-child-pass examination programme mothers are asked to state the number of cigarettes smoked daily at every gynaecological examination. At the anamnesis which is undertaken in the course of the first physician visit women are asked whether they were smokers before they became pregnant and whether they smoke during pregnancy. Women are informed about adverse effects of smoking (active and passive smoking) in the supplementary brochure of the mother-child-pass and are encouraged to take the pregnancy as a motivation to quit smoking all together. International guidelines all advise pregnant women to stop smoking and to avoid passive smoke. UK and Canadian guidelines include recommendations for nicotine replacement; all country guidelines surveyed refer women to institutions to help quitting.

Smoking secession programmes should be offered to women planning to have a baby/to pregnant women and their partners. This is for instance the case in Styria (offered by the regional sickness fund).

Alcohol: At the anamnesis of the first mother-child pass examination women are asked by their physician to state whether they consume enhanced amounts of alcohol. Women in Austria are advised to refrain from drinking alcohol during pregnancy in the supplementary brochure of the mother-child pass. Concentrated spirits or hard liquors are strictly disapproved. Women are informed about the adverse effects alcohol consumption can have on their baby. All reviewed international guidelines recommend total abstinence from alcohol if possible, although specific recommendations vary across countries.

At the anamnesis the amount of alcohol consumed by the pregnant woman should be specified more clearly. Women could be asked about their consumption habits at every examination and ought to receive standardised advice on the adverse effects of alcohol consumption at the first visit. Additionally, they should be provided with the appropriate contact information for counselling and encouraged to make use of it.

Illicit drugs: At the first anamnesis the mother-child pass instructs physicians to ask whether the mother is taking drugs. There does not seem to be any defined procedure which is followed after receiving an affirmative answer from the patient.

Women should be told that taking drugs is strongly counter-advised in pregnancy. Those taking drugs should be referred to counselling centres and warned about any adverse effects of their drug consumption.

Medicines: As part of the anamnesis undertaken by the attending physician in the course of the first mother-child-pass examination pregnant women are asked whether they take any permanent medication. Again there does not seem to be any defined procedure which is followed after receiving an affirmative answer from the patient. All international guidelines surveyed advise women to consult their health care provider before taking any medicine.

Women should be asked to list all the medications they have been taking since the beginning of the pregnancy and shortly before that, including prescription and over the counter medicines as well as complementary therapies. They should consult their physician before taking any new medicines.

Physical activity: In the course of the first examination of the mother-child-pass examination programme the attending physician should decide whether the pregnant woman can (based on her health status and that of the child) attend a birth preparation gymnastics class or not. Women are weighed at each examination and an (optional) oGTT test can be undertaken as part of the laboratory examination taking place between the 25th and the 28th week of pregnancy. Women are advised to engage in moderate physical activity in the supplementary brochure of the mother-child pass as well as being recommended to refrain completely from any competitive sports. All reviewed international guidelines give advice on physical activity and suggest that women begin or continue a moderate course of exercise.

Women could be given recommendations on pelvic floor exercises. Special counselling could be given to women with gestational diabetes.

Travelling: The supplementary brochure to the mother-child pass advises pregnant women to refrain from very long car journeys or to get up and walk around during long train journeys or flights. All reviewed international guidelines for pregnant women include advice on travelling. Travelling is in general not counter-advised and some guidelines suggest that the best time to travel is during the second trimester. Nearly all guidelines stress the importance of using a seatbelt correctly (i.e., three-point seatbelts are to be worn low, below the baby) and suggest that women wear compression stockings during air travel or consult their health professional before going on journeys.

Women should discuss their travel plans with their attending physician and should be instructed on good behavioural modifications during travel.

Dietary recommendations

In the brochure handed out with the Austrian mother-child pass, dietary recommendations are provided. It is recommended that pregnant women eat: sufficient protein, vitamins and minerals; milk and dairy products; lean meat and fish; food containing fibres (i.e. vegetables, fruit and wholemeal products) to avoid constipation. Foods to be avoided are also listed, including: raw milk, raw or not well done meat, raw or not well done fish and shellfish, soft and raw eggs, and mildew of cheese. Guidance on drinks is also given, including guidance on limiting caffeine intake.

Women could also be given advice on food hygiene, and the following recommendation on caffeine intake (a maximum of 3 cups per day), the reduction of polysaccharidic sugar and fat, and to limit the consumption of liver and fish with high mercury levels.

Dietary supplements

Vitamin D

The dietary supplementation of vitamin D is not mentioned in the Austrian brochure. The Canadian guidelines recommend standard vitamin D intake, while UK and Australian guidelines target certain groups of women.

Women of specified ethnic origin (e.g. African, Middle East), limited exposure to sunlight, or limited Vitamin D food intake could be advised to take vitamin D.

Iron

As part of the laboratory examinations of the mother-child-pass examination programme (up to the 16th week of pregnancy and between the 15th and 28th week of pregnancy) pregnant women are tested for the level of haemoglobin and hematocrit in their blood (g/dl). These values could give a first indication of the level of iron in the blood of the pregnant woman. With regard to any procedures following the interpretation of the test result or any consecutive treatment no specifications are given. Only the Canadian guidelines recommend a daily intake of 13mg. Most of the guidelines consulted test for haemoglobin levels and recommend the consumption of iron rich foods.

Based on international guidelines additional recommendations could be included in the mother-child-pass examination programme.

Folic acid, iodine, magnesium, Vitamin A

Neither the mother-child-pass examination programme nor the supplementary brochure to the mother-child pass refers to the intake of folic acid, iodine, magnesium or vitamin A.

All international guidelines regard folic acid as a key nutritional supplement and advise the intake of 0.4 mg per day before conception and up to 12 weeks of gestation. An intake of iodine (0.23-0.26 mg overall intake per day) is solely recommended in German and Swiss guidelines. UK guidelines are the only guidelines of the reviewed international guidelines advising pregnant women a 450-500 mg daily intake of magnesium. No routine recommendations exist for Vitamin A intake. The UK guidelines advise against an intake of more than 0.7 mg per day.

Based on international guidelines additional recommendations could be included in the mother-child-pass examination programme.