

health  
**technology**  
assessment



EXECUTIVE  
SUMMARY

**USE OF  
ULTRASOUND IN  
ANTENATAL &  
PRIMARY CARE**

**HEALTH TECHNOLOGY ASSESSMENT UNIT  
MEDICAL DEVELOPMENT DIVISION  
MINISTRY OF HEALTH  
MOH/PAK**

## EXECUTIVE SUMMARY

### INTRODUCTION

Ultrasound has been used for diagnostic for more than 20 years in almost all branches of medicine. Ultrasonography has been widely accepted due to its clinical usefulness, convenience and non-invasiveness, as well as fetal biometry and detection of fetal anomalies. In addition, the newer ultrasound techniques like Doppler waveforms are used for fetal echography, uterine and fetal blood flow. The use of ultrasound as an effective diagnostic modality therefore continues to increase worldwide. Improvements in resolution and image quality, and in grey scale, have further enhanced its usefulness, while the advent of endovaginal and transrectal ultrasound examinations, allow direct access to anatomical without interference from overlying abdominal organs that occur in trans-abdominal ultrasound.

### OBJECTIVES

To assess the safety, effectiveness, cost effectiveness of the use of ultrasound in antenatal care and in primary care.

### RESULTS

#### Safety

There is no scientific on adverse effects of ultrasound, although there is some evidence of a statistically significant association between ultrasound and left handedness among males.

#### *Effectiveness*

##### *Use of ultrasound in antenatal care*

There is sufficient evidence that ultrasound is effective in dating pregnancy, assessing the viability of foetus, diagnosing twin pregnancy, diagnosing intrauterine growth retardation, diagnosis of placenta praevia, and detection of congenital abnormalities. There is also evidence of effectiveness of transvaginal ultrasound in detection of congenital abnormalities, retained products of conception, and predicting pre-term labour. There is sufficient evidence that routine ultrasound in antenatal care or ultrasound examination in low-risk population does not improve the outcome of pregnancy.

##### *Use of ultrasound in Gynaecology*

There is sufficient evidence that ultrasound is effective in detecting ectopic pregnancy, screening for ovarian cancer, and detecting uterine abnormalities.

##### *Use of Ultrasound in Surgery*

There is sufficient evidence that the quality of ultrasound is effective in diagnosing abdominal trauma, appendicitis, breast lesions, and gall bladder lesions like stones and tumors.

**Training**

There is sufficient evidence that the quality of ultrasound is determined by the level of training and experience of operators, and that appropriate training should be provided to those carrying out ultrasonography.

**Cost implications**

For antenatal screening, there is sufficient evidence that routine ultrasound screening for low-risk population is not cost-effective.

**Ethical implications**

There are ethical issues that need to be considered in providing ultrasonography services.

**Legal Aspects of Ultrasound**

There are legal issues to be considered in carrying out ultrasonography.

**RECOMMENDATIONS**

There is sufficient evidence to recommend that routine antenatal screening not be carried out in the low risk population. However, ultrasound screening should be carried out for high risk mothers. In addition, it should be used for diagnosis of various conditions in pregnancy or to rule out these conditions. Ultrasound is also recommended in secondary and tertiary care for diagnosis of gynecological and surgical conditions.

Training has to be provided for all those involved in providing ultrasonography services

Ethical and legal implications need to be considered.