

NTQA

Image Requirements

*Nuchal Translucency
Quality Assurance (NTQA)
program*

Image Optimization

1. Center the fetus in the image
2. Depth -adjust
3. Focus -positioned at the level of the region of interest or just deep to it
4. Time-gain compensation (TGC) and Gain – adjust for crisp, echogenic borders
5. Dynamic Range -adapt to have a high or low contrast image
6. Cine loop



CRL Imaging

CRL image parameters:

1. Midline Sagittal view
2. Horizontal Position
3. Neutral Position
4. Crown and Rump Clearly Defined
5. Caliper Placement
6. Magnification



Image 9 (Stone, Eddleman, & Duenwald, 2021)

NTQA Image Requirements

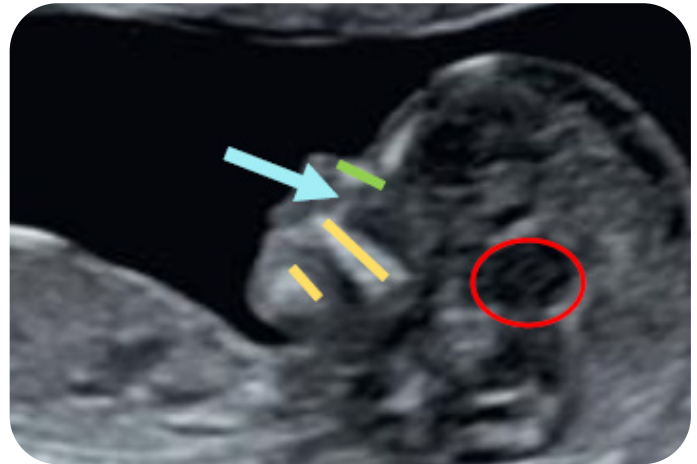
Mid Sagittal Plane

Midline profile:

-  Absence of maxilla bone
-  Palate(rectangular shape) and mandible present
-  Nasal bone present
 - Echogenic tip of nose

Brain landmarks:

-  Diencephalon present



NT Imaging

NT image parameters:

1. Midline Sagittal Plane
2. Magnification
3. Neutral Position
4. Caliper Placement



NTQA Image Requirements

Mid Sagittal Plane

- Absence of maxilla bone
- Palate and mandible bones visible
- Nasal bone, skin over nasal bone, and tip of nose
- Anechoic diencephalon visible
- Long axis of NT visible

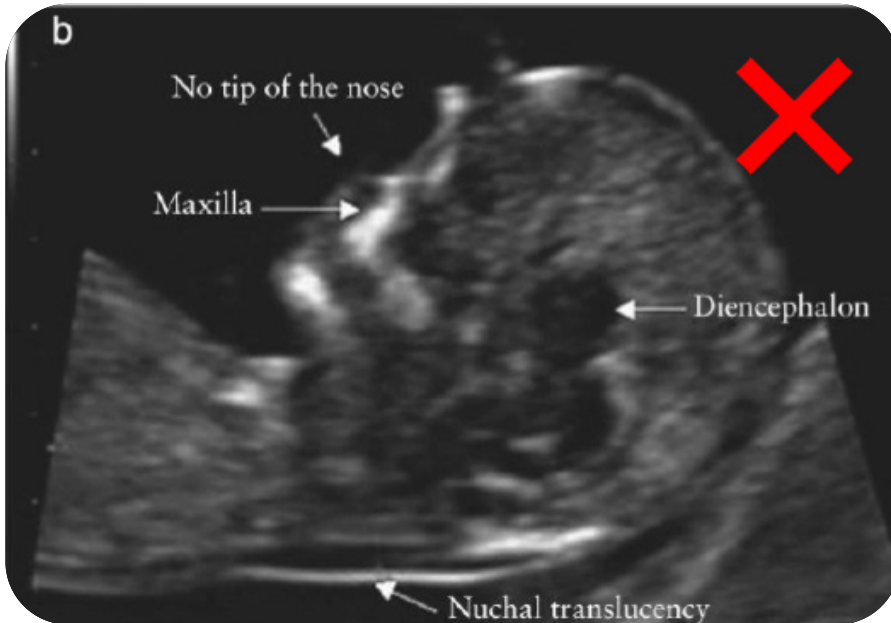
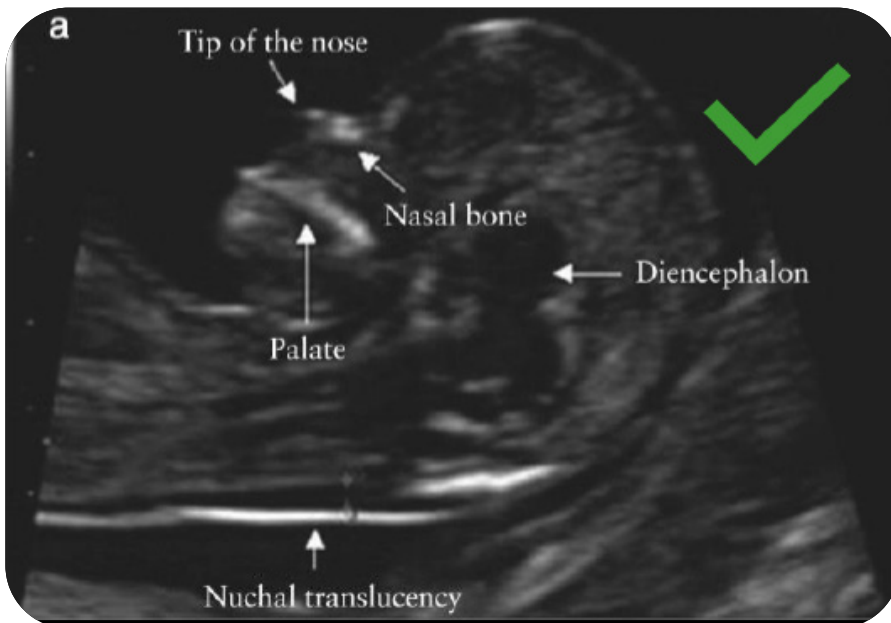


Image 1&2: (Luchi, Persico, Rembouskos, & Nicolaides, 2014)

NTQA Image Requirements

Magnification

- Zoom should be set so that the head and thorax occupy the majority (>75%) of the image.
- Insufficient use of zoom makes caliper placement difficult and inaccurate.



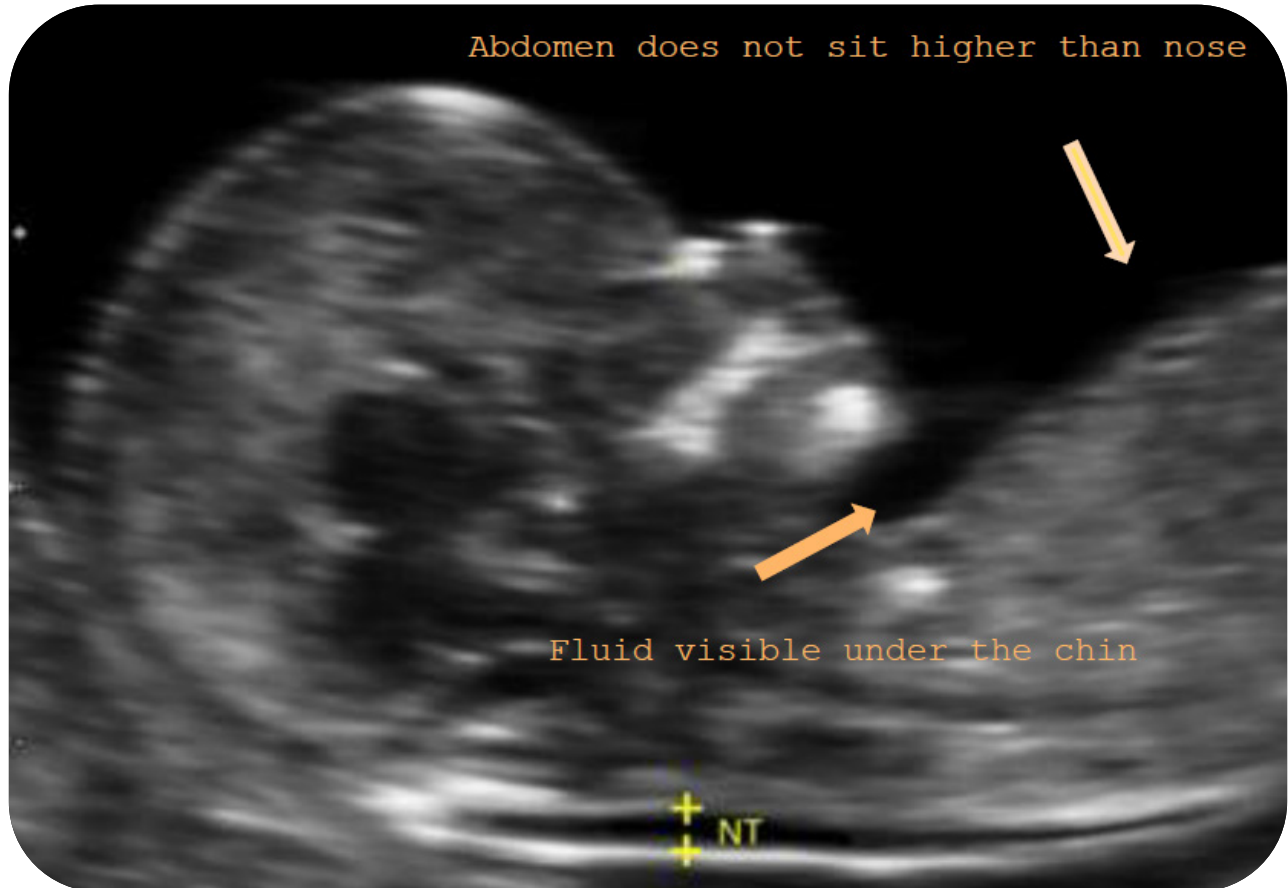
Image 3: (Profema Fetal Medicine Centre, 2021)



Image 4: (Heavenly 3D 4D Ultrasounds, 2016)

NTQA Image Requirements

Neutral Position

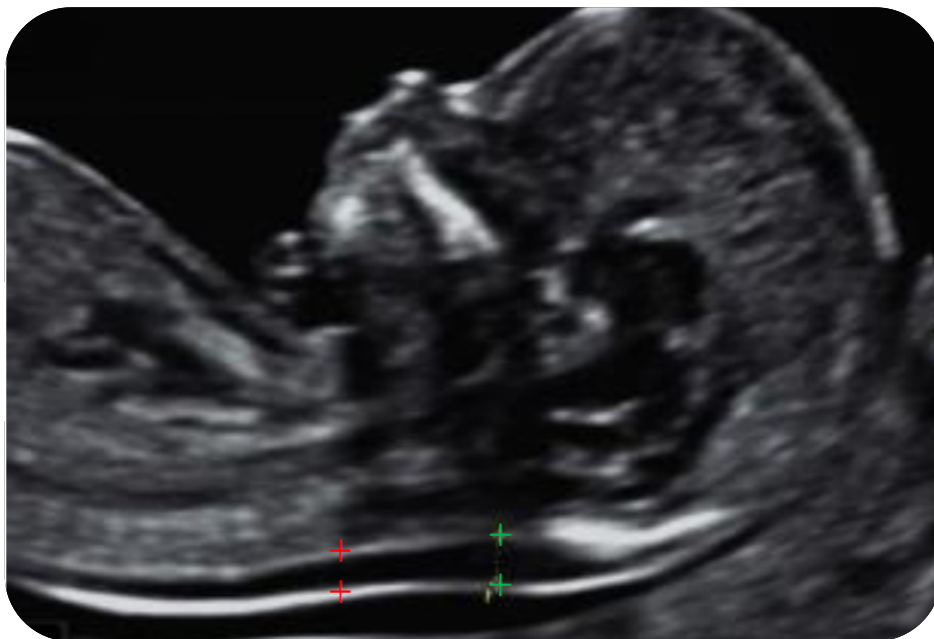


When the fetal neck is in a hyperextended position the measurement can be increased by up to 0.6 mm. When the neck is in a flexed position, the measurement can be decreased by up to 0.4 mm. (FMF) The fetal abdomen should not sit higher than the nasal bone.

NTQA Image Requirements

Caliper Placement

- Always measure the widest portion of the NT



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Inner portion of the caliper should be flush with the inner portion of the echogenic NT border



Correct



Incorrect

Results in under -
Measurement

NT Imaging: Other Notes

Take multiple measurements and always use the LARGEST measurement that meets the FMF criteria

Ensure that you see the amnion separate from the NT. Show it in the NT image if possible.

Optimize ultrasound machine controls

Control	Optimization
focus	Place just inferior to the NT for optimal lateral resolution
Gain	Lower overall and TGCs to reduce noise fill-in of NT
Depth	Optimize depth before adjusting zoom
Sector width	Reduce sector width to improve lateral resolution
Zoom	Use "write zoom" instead of "read zoom"

NTQA Image Requirements

Quality Assurance

CRL

Parameter	Feedback
Magnification/depth:	
Entire CRL occupies the majority (> 2/3) of the screen	
Fetus is centered in the image	
Midline sagittal image:	
Nasal bone visible	
Skin line over nasal bone visible	
Echogenic tip of the nose is visible	
Frontal process of the maxilla not visible	
Translucent diencephalon visible	
Rectangular shape of the palate visible	
Spine is visible. Body is aligned with head	
Neutral position	
Pocket of fluid visible between the fetal chest and chin	
Horizontal position	
Sagittal section of the fetus perpendicular to the soundwave.	
Caliper placement:	
Longest measurement of the fetus is taken with clearly defined crown and rump.	
Calipers placed on the outer borders of crown and rump	
Gain	
Set to show intracranial landmarks and skin lines	
Focus	
Sits at or just below NT level	
Other	

NT

Parameter	Feedback
Magnification/depth:	
Fetus occupies the majority (> 75%) of the screen	
Fetal head and upper chest (from crown to include the upper section of the heart) are centered in the image	
Midline sagittal image:	
Nasal bone visible	
Skin line over nasal bone visible	
Echogenic tip of the nose is visible	
Frontal process of the maxilla not visible	
Translucent diencephalon visible	
Rectangular shape of the palate visible	
Neutral position	
Pocket of fluid visible between the fetal chest and chin	
Horizontal position	
Sagittal section of the fetus, perpendicular to the soundwave	
Caliper placement:	
Calipers placed on the upper and lower edges of the NT	
Widest part of the NT is measured	
Gain	
Set to show intracranial landmarks and crisp NT lines	
Focus	
Sits at or just below NT level	
Other	

NTQA

Image Requirements

Nuchal Translucency Quality Assurance (NTQA) program

Thank You



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Resources & Recommendations

Review the FMF Imaging protocol and re-watch the NT Measurement sections of the [FMF 11-13 weeks scan course](#).

This [video](#) by the New Zealand Ministry of Health provides excellent tips for imaging and measuring CRLs and NTs.

Review all images for acceptability before using NT and CRL measurements for eFTs.

