User interface test ENDORISK – participant information

ENDORISK is a Bayesian network, which can calculate the risk of lymph node metastases and outcome in patients with endometrial carcinoma based on personalized patient characteristics. It's use is split up in to two parts: preoperative and postoperative use. In the preoperative phase, ENDORISK can be used to calculate risk of lymph node metastases based on several variables that have been determined for diagnosis. In the postoperative phase, ENDORISK can be used to calculate outcome based on preoperative as well as postoperative variables such as pathological results from surgery.

For the scope of the first studies and use, we want to focus only on the preoperative phase. This means that for now, we are only looking at risk of lymph node metastases and preoperative variables.

A user interface for ENDORISK has been created under assignment and supervision of Marike Lombaers (MD/ PhD candidate gynaecologic oncology, Radboudumc Nijmegen), dr. Hanny Pijnenborg (oncologic gynaecologist, Radboudumc Nijmegen) and prof. Peter Lucas (Artificial Intelligence, university of Twente) by Anna Kleinau (student-assistant Hannover Medical School, creator RUBIN website, master student computer sciences Otto-von-Guericke University, Magdeburg) and prof. Steffen Oeltze-Jafra (Peter L. Reichertz Institute for Medical Informatics, Hannover Medical School, Germany).

We would like to invite you to test the user interface and let us know what your experience with ENDORISK is. This can be anything from letter type to general usage of the website. We have a test patient case with several instructions to use. The conclusion with the primary treatment and result is written down as well so you can see if the results from ENDORISK line up with your expectations.

During the user interface test, we use a 'think aloud protocol'. This means that we will record the test for later reviewing, and will ask you to say everything out loud that you are thinking and planning to do during the test. This helps us to get a view of possible aspects of the user interface that we might need to change.

At the start of the recording, we will ask for your consent to use the recording for analysis. The recording will not be used for any other purpose than analysis of the user interface test and will only be shown to the participating researchers. If you have any questions in advance, please ask them now.

Thank you in advance for your participation!

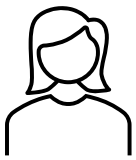
Kind regards,

Marike Lombaers and Anna Kleinau

Instructions:

Test cases:	
1	Go to https://rubin.herokuapp.com
2	Select preferred language
3	Go to the endometrial carcinoma network
4	Follow the tutorial
5	Calculate the risk of lymph node metastases for pre-written example **patient case 1** (see **page 3**)
6	Look at the explanation of the calculated risk
7	Look at the tab 'all predictions', can you explain the likely state of the L1CAM variable?
8	Look at the tab 'compact network' and then the tab 'full network', can you explain what you see here?
9	Compare the calculated the risk of lymph node metastases for case 1 with the risk using the additional information on **page 5** to add more evidence.
10	Make a pdf export for the patient case you just calculated risk for
11	End of user interface test part 1

Example patient case 1.



Miss. A. Test

Age: 75

BMI: 35

Medical history: pulmonary embolisms for which anticoagulants has been started

Presenting symptoms: post-menopausal bleeding

Cytology: PAP 1, HPV Neg, K1O6P1A2C1B1 (see table on page 4 for explanation)

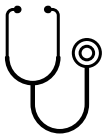
Pipelle: endometrioid adenocarcinoma, grade 2, vimentine positive, CK7 positive, ER 100%, PR 100%, P53 wildtype

Erytrocyten	4,00 - 5,20 10**12/l	4,56
Hemoglobine	7,4 - 9,9 mmol/l	6,9 ⌄
Hematocriet	0,36 - 0,46 l/l	0,36
Leukocyten	4,0 - 11,0 10**09/l	7,1
MCH	fmol	1,51
MCHC	20,0 - 21,5 mmol/l	19,1 ⌄
MCV	80 - 100 fl	79 ⌄
Red Cell Distribution Width (RDW)	12,1 - 14,3 %	----
Trombocyten	150 - 400 10**09/l	378

Background information on KOPAC-B, the Dutch version of the Bethesda Classification:

	K	O	P	A	C	B
	Composition	Inflammatory signs	Squamous epithelium	Other abnormalities endometrium	Cilinder epithelium endocervix	Assessability of the specimen
0	Insufficient	N.A.	N.A.	N.A.	N.A.	N.A.
1	Endocervical cells (EC)	Viral infection	No abnormalities	No other abnormalities	No abnormalities	Good assessability
2	Squamous metaplastic cells (SM)	Trichomonas vaginalis	Abnormal squamous epithelium	Epithelial atrophy	No endocervical epithelium	N.A.
3	Endometrium (EM)	Bacterial infection	Atipical squamous metaplasia	Atypical repair respons	Some atypical endocervical cells	Cannot be assessed
4	EC + SM cells	Candida Albicans	Slight dysplasia	Slight atypical endometrium	Slight atypical endocervical epithelium	
5	EC + EM cells	Gardnerella Vaginalis	Moderate dysplasia	Moderate atypical endometrium	Moderate atypical endocervical epithelium	
6	SM + EM cells	No signs of inflammation	Severe dysplasia	Severe atypical endometrium	Severe atypical endocervical epithelium	
7	EC+SM+EM cells	Actinomyces	Carcinoma in situ	Adenocarcinoma endometrium	Adenocarcinoma in situ	
8	Only SM cells	Chlamydia	N.A.	Metastasis malignant tumor	N.A.	
9	N.A.	Aspecific inflammation	Squamous cell carcinoma	Other malignant tumor	Adenocarcinoma of the endocervix	

Additional information example patient case 1:



CA125: 36 IU/L

Abdominal CT scan (made for other reasons): enlarged uterus, not homogeneous, pathologically enlarged lymph nodes para-aortic and pelvic.

Primary treatment: Total laparoscopic hysterectomy with bilateral salpingo-oophorectomy and lymph node dissections.

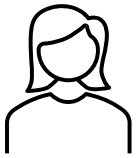
Post-operative pathology: FIGO IIIC2 endometrioid adenocarcinoma grade 2. Myometrial invasion >50%, no tumor in cervical stroma, LVSI present.

Adjuvant treatment: chemoradiotherapy

Extra instructions and cases

5	**Calculate the risk of lymph node metastases for pre-written example patient case 1 (see page 2)**
6	Look at the explanation of the calculated risk
9	Do step 5 and 6 for cases 2 and 3 (see pages 7 and 8)
10	Use the compare function again to change some of the added evidence for case 2 and/or 3
11	Look at the results and explanation after using the compare function
12	Calculate the risk of lymph node metastases for patient case 4 (see page 9)
13	Look at the explanation of the calculated risk
14	Add the postoperative variables to the ENDORISK model from patient case 4
15	Look at the explanation of the calculated risk for the postoperative phase

Example patient case 2.



Ms. B. Tester

Age: 72

BMI: 47

Medical history: hypertension, obstructive sleep apnea syndrome, asthma

Presenting symptoms: postmenopausal bleeding

Cytology: PAP 3a2, K6O6P1A5C2B1 (see table on page 2 for explanation)

Pipelle: serous endometrial carcinoma, p53 overexpression, ER 70-80%, PR 70-80%, p16 partially positive, large parts negative.

Component	Ref.waarden en eenheden	
Erytrocyten	4,00 - 5,20 10**12/l	4,67
Hemoglobine	7,4 - 9,9 mmol/l	9,5
Hematocriet	0,36 - 0,46 l/l	0,46
Leukocyten	4,0 - 11,0 10**09/l	7,7
MCH	fmol	2,03
MCHC	20,0 - 21,5 mmol/l	20,9
MCV	80 - 100 fl	97
Red Cell Distribution Width (RDW)	12,1 - 14,3 %	14,5 ^
Trombocyten	150 - 400 10**09/l	269

CA125: 16 IU/L

Abdominal CT scan: no suspicion of lymph node metastases or distant metastases

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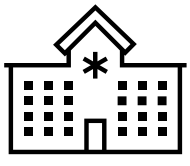
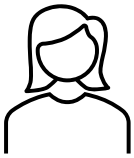


Primary treatment: total laparoscopic hysterectomy with bilateral salpingo-oophorectomy, surgical staging was omitted due to comorbidity

Postoperative pathology: At least FIGO IA grade III serous (40%) and endometrioid (60%) endometrial carcinoma. Myometrial invasion <50%, no tumor in cervical stroma, LVSI present.

Adjuvant treatment: brachytherapy

Example patient case 3.



Miss. C. Testing

Age: 66

BMI: 34

Medical history: hypertension, endometrial polyps removed (benign histology ??)

Presenting symptoms: none, ovarian cysts as coincidental findings while evaluation of sonographic evaluation of her kidney.

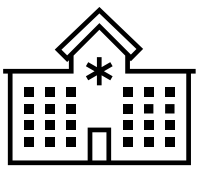
Cervical Cytology: not performed

Pipelle: well differentiated endometrioid endometrial carcinoma, PR 75%, ER 75%, MSI intact, p53 not determined

Erytrocyten	4,00 - 5,20 10**12/l	4,74
Hemoglobine	7,4 - 9,9 mmol/l	8,5
Hematocriet	0,36 - 0,46 l/l	0,43
Leukocyten	4,0 - 11,0 10**09/l	11,3 ^
MCH	fmol	1,79
MCHC	20,0 - 21,5 mmol/l	19,9 v
MCV	80 - 100 fl	90
Red Cell Distribution Width (RDW)	12,1 - 14,3 %	13,2
Trombocyten	150 - 400 10**09/l	389

CA125: 11 IU/L

CT scan: known endometrial carcinoma, myometrial invasion cannot be determined on CT. Multicystic adnexa (99mm left, 53 mm right), left slight complex components, bilateral slight increased septa. Prominent lymph node axillair right side (13 mm), which on ultrasound was not suspected for malignancy.

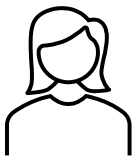


Primary treatment: total laparoscopic hysterectomy with bilateral salpingo-oophorectomy.

Post-operative pathology: endometrioid endometrial carcinoma grade 1, FIGO stage IA. No tumor in cervical stroma, no LVSI, no myometrial invasion. (The cysts in the adnexa were serous cystadenofibroma, focal borderline malignancy, not invasive.)

Adjuvant therapy: none, follow-up.

Example patient case 4.



Ms. D. von Test

Age: 59

BMI: 38

Medical history: hypertension

Presenting symptoms: postmenopausal bleeding

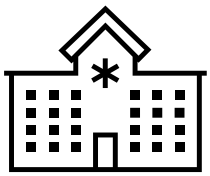
Cytology: pap 3a2, K5O9P1A4C1B1, Bethesda: atypical glandular cells endometrium

Pipelle: endometrioid adenocarcinoma of the endometrium, grade 2, MSI intact, L1CAM positive, estrogenreceptor 70%, progesteronreceptor 20%, p53 wildtype, M1B1 40-50%, vimentin positive

Erytrocyten	4,00 - 5,20 10**12/l	5,58 ^
Hemoglobine	7,4 - 9,9 mmol/l	10,3 ^
Hematocriet	0,36 - 0,46 l/l	0,50 ^
Leukocyten	4,0 - 11,0 10**09/l	13,3 ^
MCH	fmol	1,85
MCHC	20,0 - 21,5 mmol/l	20,7
MCV	80 - 100 fl	89
Red Cell Distribution Width (RDW)	12,1 - 14,3 %	14,4 ^
Trombocyten	150 - 400 10**09/l	392

CA125: 16 IU/L

CT scan: not performed



Primary treatment: total laparoscopic hysterectomy with bilateral salpingo-oophorectomy and sentinel procedure (without consequence for lymphnode dissection if sentinel node cannot be found or is hard to reach).

Postoperative pathology: grade 1 endometrioid adenocarcinoma, FIGO stage IA, LVSI negative, myometrium invasion <50%, cervical stroma without tumor, sentinel lymph nodes not positive.

Adjuvant therapy: none, follow-up.