

Appendix S1.

Checklist on guideline-adherence of patients with squamous cell carcinoma (SCC) of the skin

Based on the clinical practice guideline "Squamous cell carcinoma of the skin" of the Dutch Society of Dermatology and Venereology (21).

PREVENTION:

1. The patient received advice on appropriate sun protective behavior:

☐ Yes

☐ No

Comment:

2. Risk factors to develop squamous cell carcinoma were adequately evaluated:

☐ Yes

☐ No

Comment:

DIAGNOSIS / STAGING:

3. Regional lymph nodes were palpated before therapy was started:

☐ Yes

☐ No

Comment:

4. A punch biopsy of the SCC was performed before therapy was started:

☐ Yes

☐ No

Comment:

5. An ultrasound (including biopsy in case of a suspicion of a lymph node metastasis) of regional lymph nodes was performed in high-risk* SCC:

☐ Yes

☐ No

☐ Not applicable

Comment:

6. The exact location of the SCC was reported and/or photographed:

☐ Yes

☐ No

Comment:

7. It was documented if the SCC was previously treated:

☐ Yes

☐ No

Comment:

8. The maximum tumor diameter was reported and adequately included in staging:

☐ Yes

☐ No

Comment:

9. Pathologic assessment on perineural invasion was reported and adequately included in staging:

☐ Yes

☐ No

Comment:

10. Pathologic assessment on vascular invasion was reported and adequately included in staging:

☐ Yes

☐ No

Comment:

11. Pathologic assessment on histological differentiation was reported and adequately included in staging:

☐ Yes

☐ No

Comment:

12. Pathologic assessment on depth of tumor growth was reported and adequately included in staging:

☐ Yes

☐ No

Comment:

TREATMENT:

Conventional surgical excision:

13. An excision margin of 5 mm was used when recommended (in case of primary and low-risk SCC*):

- ☐ Yes
☐ No
☐ Not applicable

Comment:

14. An excision margin of 10 mm was used when recommended (in case of recurrent and/or high-risk SCC*):

- ☐ Yes
☐ No
☐ Not applicable

Comment:

15. Re-excision was performed in case of a high-risk SCC* with <2 mm tumor-free margin:

- ☐ Yes
☐ No
☐ Not applicable

Comment:

Other treatment options:

16. The reason(s) to choose for another suitable treatment option (e.g. radiotherapy, cryosurgery, or curettage and cautery) are well-documented:

- ☐ Yes
☐ No
☐ Not applicable

Comment:

17. Treatment options discouraged by the guideline (e.g. topical imiquimod, intralesional interferon alfa, of photodynamic therapy) were not performed:

- ☐ Yes
☐ No

Comment:

FOLLOW-UP:

18. A follow-up examination was performed at least 6-monthly during the first year after treatment in case of a low-risk SCC*:

- ☐ Yes
☐ No
☐ Not applicable
☐ Unknown

Comment:

19. A follow-up examination was performed at least 3-monthly during the first year after treatment in case of a high-risk SCC*:

- ☐ Yes
☐ No
☐ Not applicable
☐ Unknown

Comment:

20. Follow-up examination at least included inspection and palpation of the treated area, palpation of the regional lymph nodes and total-body examination:

- ☐ Yes
☐ No
☐ Unknown

Comment:

21. The primary care physician (general practitioner or elderly care physician) of the patient was informed about the diagnosis and therapy of the SCC:

- ☐ Yes
☐ No

Comment:

**high-risk SCC defined as T2 or higher according to the classification of the American Joint Commission on Cancer (AJCC) TNM system (S1)*

Reference

S1. Dinehart SM, Peterson S. Evaluation of the American Joint Committee on cancer Staging System for cutaneous squamous cell carcinoma and proposal of a new staging system. *Dermatol Surg* 2005; 31: 1379-1384.

Appendix S2

Checklist on guideline-adherence of patients with basal cell carcinoma (BCC)

Based on previously developed and tested AUDIT-checklist (19), originally based on the clinical practice guideline "Evidence-based guideline on the treatment of basal cell carcinoma" of the Dutch Society of Dermatology and Venereology (20).

PREVENTION:

1. The patient received advice on appropriate sun protective behavior:

☐ Yes

☐ No

Comment:

DIAGNOSIS:

2. A punch biopsy of the BCC was performed before therapy was started:

☐ Yes

☐ No

Comment:

3. The histopathological subtype of the BCC was reported:

☐ Yes

☐ No

Comment:

4. The exact location of the BCC was reported and/or photographed:

☐ Yes

☐ No

Comment:

5. It was documented if the BCC was previously treated:

☐ Yes

☐ No

Comment:

6. The maximum tumor diameter was reported:

☐ Yes

☐ No

Comment:

TREATMENT:

Conventional surgical excision:

7. An excision margin of 3 mm was used when recommended (in case of a non-infiltrative and primary BCC with a maximum diameter ≤ 10 mm):

☐ Yes

☐ No

☐ Not applicable

Comment:

8. An excision margin of 5 mm was used when recommended (in case of an infiltrative and/or recurrent BCC with a maximum diameter > 10 mm):

☐ Yes

☐ No

☐ Not applicable

Comment:

Photodynamic therapy:

9. Only performed in a primary, superficial BCC:

☐ Yes

☐ No

☐ Not applicable

Comment:

Cryosurgery:

10. Only performed in a superficial or nodular BCC with a maximum diameter ≤ 20 mm:

☐ Yes

☐ No

☐ Not applicable

Comment:

Topical imiquimod:

11. Only performed in a primary and superficial BCC with a maximum diameter ≤ 20 mm and outside of the H-zone:

- ☐ Yes
☐ No
☐ Not applicable

Comment:

Curettage and cautery:

12. Only performed in a primary, superficial or nodular BCC with a maximum diameter ≤ 5 mm and outside of the H-zone:

- ☐ Yes
☐ No
☐ Not applicable

Comment:

Other treatment options (e.g. radiotherapy, Mohs micrographic surgery):

13. The reason(s) to choose for another treatment option are well-documented:

- ☐ Yes
☐ No
☐ Not applicable

Comment:

FOLLOW-UP:

14. A follow-up examination was performed at least within one year after treatment in case of a high-risk BCC and/or in case of multiple BCC:

- ☐ Yes
☐ No
☐ Not applicable
☐ Unknown

Comment:

15. Follow-up examination at least included inspection of the treated area and the sunexposed skin:

- ☐ Yes
☐ No
☐ Not applicable
☐ Unknown

Comment:

16. The primary care physician (general practitioner or elderly care physician) of the patient was informed about the diagnosis and therapy of the BCC:

- ☐ Yes
☐ No

Comment:

Appendix S3

Details of the regression models for the correlation of different factors related to adherence to guidelines used in this study

First, a descriptive, univariate analysis was performed. Categorical variables were expressed as numbers (and proportions) and compared using a χ^2 test or Fisher's exact test, when appropriate. Numerical variables were expressed as medians with ranges and compared using a Mann–Whitney test.

Since the distribution of adherence guidelines was expected to be very skew, and since the relation of age and comorbidity with adherence to guidelines is likely to be confounded by various patient and tumour characteristics (Table II), a multivariable logistic regression analysis was performed afterwards.

As no well-established cut-off for a satisfactory level of adherence to guidelines is known from the literature, a cut-off close to the median was selected and 2 categories were formed ("high" vs. "low" adherence to guidelines). This would yield 2 groups of approximately equal size, which maximizes the power of the

study. *A priori* estimates of study precision would require extensive knowledge about the correlation between all variables to be included in the model. That information is not available. Therefore, we applied the rule of thumb, that for multivariable logistic regression at least 10 observations per variable in the model are required on the least prevalent of the 2 outcomes. Therefore, at least 360 ($18 \times 10 \times 2$) observations were needed in the case adherence guideline has a 50:50 distribution over "high" vs. "low". To allow for an unbalance we decided to aim for inclusion of 400 patients. The distribution with regard to age is not required to be balanced, but a large unbalance would result in a relatively low precision for the effect of age on adherence to guidelines. Since it became clear during the study that the consecutive inclusion in the younger group was much faster than in the old group, after the inclusion of 336 patients (274 aged <80 years; 62 aged ≥ 80 years), we continued by only including patients from the older age group. In addition, secondary multivariate logistic regression analyses were performed to study differences in management decisions found in the univariate analyses in more detail.

Table SI. Management decisions and adherence to guidelines in squamous cell carcinoma (SCC)

Characteristics	Overall population (n = 75)	Patients aged < 80 years (n = 34)	Patients aged ≥80 years (n = 41)	p-value
Treatment performed, n (%):				
Conventional surgical excision	72 (96.0)	33 (97.1)	39 (95.1)	1.000
Radiotherapy	3 (4.0)	2 (4.9)	1 (2.9)	
Compliance (guideline-adherence ≥ 90%), n (%)	23 (30.7)	12 (35.3)	11 (26.8)	0.429
Guideline-adherence in %, median (range)	88 (56–100)	87 (63–100)	88 (56–100)	0.898
Guideline-adherence, per recommendation, n (%):				
Prevention and risk factor evaluation				
Advice on appropriate sun protection	47 (62.7)	21 (61.8)	26 (63.4)	0.883
Evaluation of risk factors ^a	45 (60.0)	19 (55.9)	26 (63.4)	0.507
Diagnosis/staging				
Palpation regional lymph nodes performed	53 (70.7)	25 (73.5)	28 (68.3)	0.620
Histological confirmation by skin biopsy	74 (98.7)	33 (97.1)	41 (100)	0.453
Ultrasound of regional lymph nodes in high-risk SCC ^a	8 (47.1)	3 (50.0)	5 (45.5)	1.000
Reporting and/or photographing exact location	75 (100)	34 (100)	41 (100)	NA
Primary or recurrent tumour reported	69 (92.0)	30 (88.2)	39 (95.1)	0.401
Maximum tumour diameter reported and adequately included in staging	40 (53.3)	18 (52.9)	22 (53.7)	1.000
Perineural invasion reported and adequately included in staging	70 (93.3)	31 (91.2)	39 (95.1)	0.654
Vascular invasion reported and adequately included in staging	70 (93.3)	31 (91.2)	39 (95.1)	0.654
Histological differentiation reported and adequately included in staging	75 (100)	34 (100)	41 (100)	NA
Tumour depth reported and adequately included in staging	71 (94.7)	31 (91.2)	40 (97.6)	0.323
Treatment				
Using 5-mm excision margin when recommended	50 (100)	25 (100)	25 (100)	NA
Using 10-mm excision margin when recommended	1 (12.5)	0 (0)	1 (14.3)	NA
Re-excision in high-risk SCC ^b with <2-mm tumour-free margin	4 (50.0)	2 (100)	2 (33.3)	0.429
Reason for choosing other suitable treatment option reported	6 (100)	2 (100)	4 (100)	NA
Did not perform treatment option which is discouraged in guideline	75 (100)	34 (100)	41 (100)	NA
Follow-up				
At least 6-monthly follow-up during the first year for low-risk SCC	49 (89.1)	24 (96.0)	25 (83.3)	0.204
At least 3-monthly follow-up during the first year for high-risk SCC ^b	9 (69.2)	5 (100)	4 (50.0)	0.105
Follow-up examination at least included inspection and palpation of treated area and regional lymph nodes, together with total-body skin examination	59 (100)	29 (100)	30 (100)	1.000
Primary care physician is informed about diagnosis and management	62 (82.7)	27 (79.4)	35 (85.4)	0.498

^aSun exposure behaviour, medical history (including history of skin cancer), current medication and smoking should have at least been included in the evaluation of risk factors. ^bHigh-risk SCC defined as T2 or higher according to the classification of the American Joint Commission on Cancer (AJCC) TNM system (26); values may not add up due to missing data and rounding.

NA: not applicable.

Table SII. Management decisions and adherence guidelines in basal cell carcinoma (BCC)

Characteristics	Overall population (n = 326)	Patients aged < 80 years (n = 239)	Patients aged ≥ 80 years (n = 87)	p-value
Treatment performed, n (%): ^a				
Conventional surgical excision	237 (72.7)	172 (72.0)	65 (74.7)	0.004*
Photodynamic therapy	34 (10.4)	25 (10.5)	9 (10.3)	
Topical imiquimod	17 (5.2)	15 (6.3)	2 (2.3)	
Mohs micrographic surgery	21 (6.4)	20 (8.4)	1 (1.1)	
Radiotherapy	15 (4.6)	6 (2.5)	9 (10.3)	
No treatment	2 (0.6)	1 (0.4) ^b	1 (1.1) ^c	
Compliance (guideline-adherence ≥ 90%), n (%)	178 (54.6)	134 (56.1)	44 (50.6)	0.378
Guideline-adherence in %, median (range)	90 (44–100)	90 (50–100)	90 (44–100)	0.301
Guideline-adherence, per recommendation, n (%):				
Prevention				
Advice on appropriate sun protection	230 (70.6)	185 (77.4)	45 (51.7)	<0.001*
Diagnosis				
Histological confirmation by skin biopsy	323 (99.1)	236 (98.7)	87 (100)	0.568
Histopathological subtype reported	326 (100)	239 (100)	87 (100)	NA
Reporting and/or photographing exact location	326 (100)	239 (100)	87 (100)	NA
Primary or recurrent tumor reported	293 (89.9)	212 (88.7)	81 (93.1)	0.244
Maximum tumor diameter reported	160 (49.1)	116 (48.5)	44 (50.6)	0.745
Treatment ^a				
Using 3-mm excision margin when recommended	90 (97.8)	76 (98.7)	14 (93.3)	0.301
Using 5-mm excision margin when recommended	117 (90.0)	80 (88.9)	37 (92.5)	0.753
Using PDT only in primary, superficial BCC	30 (88.2)	22 (88.0)	8 (88.9)	1.000
Using IMI only in superficial BCC < 20 mm and outside of the H-zone	12 (70.6)	11 (73.3)	1 (50.0)	0.515
Reason for choosing other treatment option reported	35 (94.6)	26 (96.3)	9 (90.0)	0.473
Follow-up				
At least yearly follow-up for high-risk and/or multiple BCCs	205 (91.9)	143 (90.5)	62 (95.4)	0.224
Follow-up examination at least included inspection of treated area and sun-exposed skin	204 (99.5)	142 (99.3)	62 (100.0)	1.000
Primary care physician is informed about diagnosis and management	293 (89.9)	209 (87.4)	84 (96.6)	0.016*

^aData regarding cryosurgery and curettage and cautery were not shown since these treatment options were not performed among the patients within this study. ^bSince no clinical tumour residue was seen after punch biopsy a wait-and-see policy was chosen. ^cPatient died before treatment; * $p \leq 0.05$ (shown in bold). Values may not add up due to missing data and rounding.
NA: not applicable.