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## Appendix S1

# Patient validation survey: Methodology and Responses

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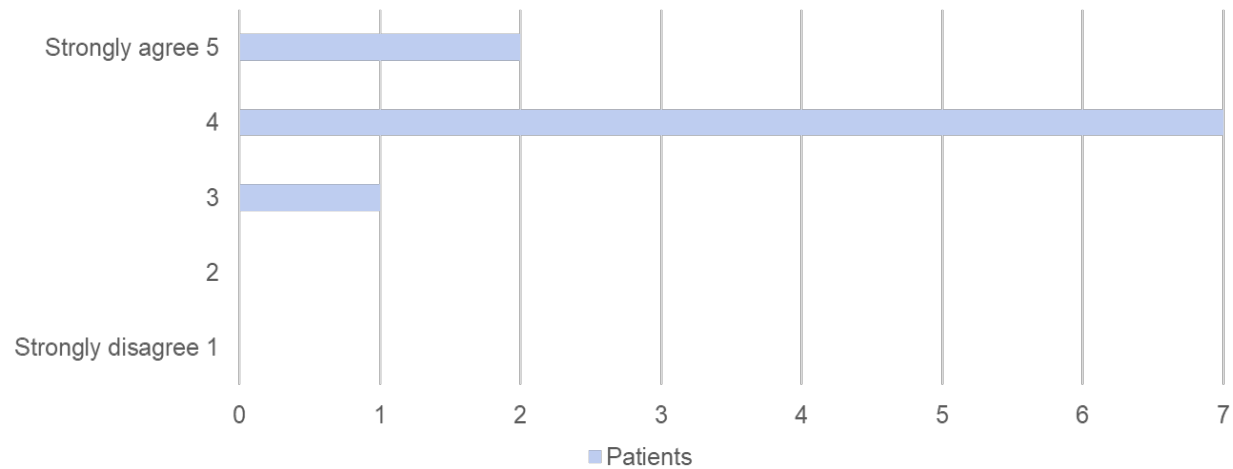
## Methodology

Patient validation questions were posed to patients by expert dermatologists participating in the Personalising Actinic Keratosis Treatment (PAKT) consensus project between October and November 2022. The purpose of these questions is to understand the patient perspective on personalising treatment for actinic keratosis and support patient-centred recommendations generated by the PAKT project. Questions were posed as both rating and free-text response types and covered topics such as the patient's understanding of disease chronicity, their treatment goals, and their views on what is important to discuss when making shared-treatment decisions with their physician. Panellists obtained oral consent from their patients for their participation, and then discussed each question with them and noted the responses in an interactive PDF document. In total, the PAKT experts surveyed 11 patients using both rating and free-text response question types.

## Survey questions and responses

- 1) To what extent do you think your patient agrees with the following: *'Your patient understands the chronic nature of their actinic keratosis and the requirement for repeated, ongoing management'*

*On a scale of 1 (strongly disagree) to 5 (strongly agree), please indicate your patient's level of agreement with this statement\**



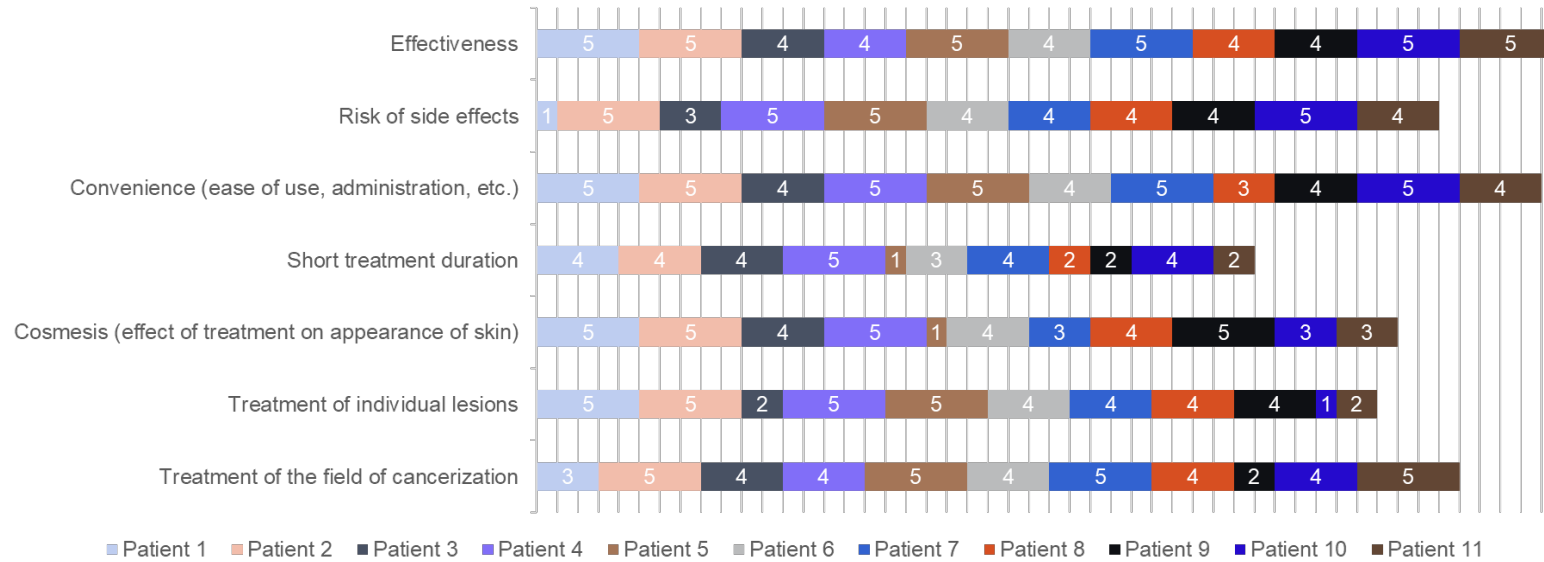
\*10 out of 11 patients surveyed responded to this question.

**2) What are your patient's goals for their treatment throughout the actinic keratosis management journey?**

<ul style="list-style-type: none"><li>• Eradication of actinic keratosis to prevent cancerous lesion growth and surgery (7/11)</li></ul>
<ul style="list-style-type: none"><li>• Minimise the disease (4/11)</li></ul>
<ul style="list-style-type: none"><li>• Visible cosmetic results (4/11)</li></ul>
<ul style="list-style-type: none"><li>• Reduce side-effects/downtime (2/11)</li></ul>
<ul style="list-style-type: none"><li>• Fast results (1/11)</li></ul>
<ul style="list-style-type: none"><li>• Long-lasting results (1/11)</li></ul>
<ul style="list-style-type: none"><li>• Acceptable pain and tolerable inflammation (1/11)</li></ul>
<ul style="list-style-type: none"><li>• Overall treatment of actinic keratosis as they are currently perceived as a “health menace” (1/11)</li></ul>
<ul style="list-style-type: none"><li>• Cost-friendly procedures (1/11)</li></ul>

**3) Based on your discussion with the patient, how important are these aspects of treatment to them?**

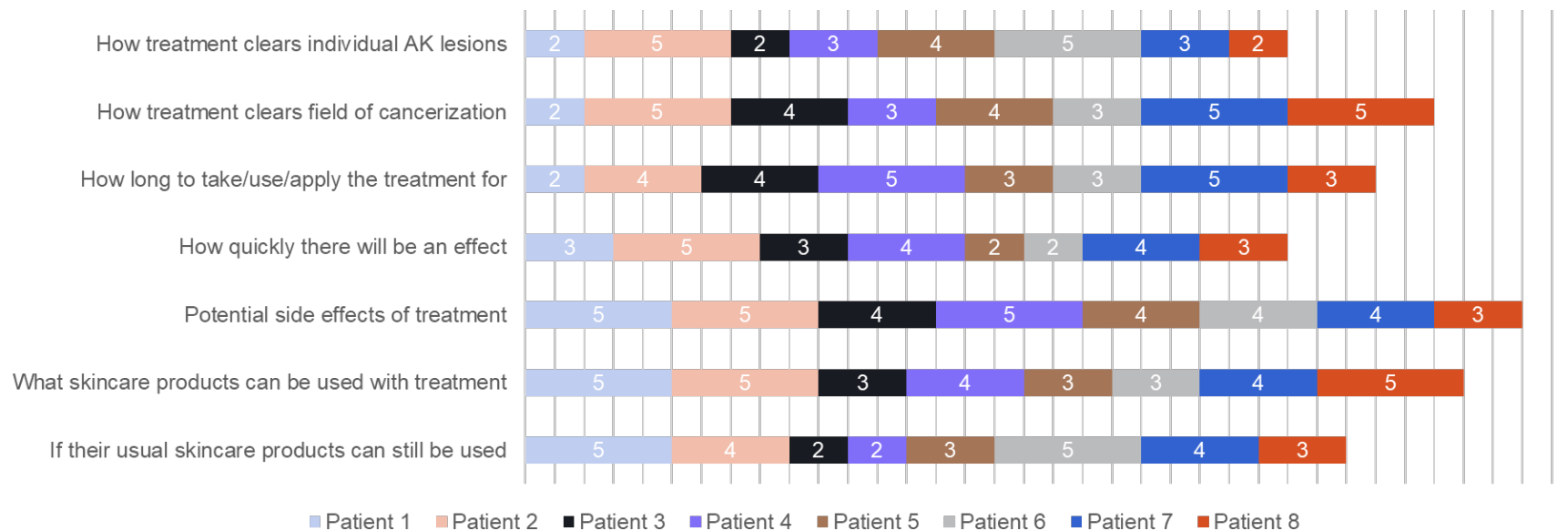
*On a scale of 1 (not very important) to 5 (very important), please rate how important these aspects of treatment are\**



\*11 out of 11 patients surveyed responded to this question.

**4) Based on your discussion with the patient, how important do they feel it is to discuss the following aspects when making treatment decisions?**

*On a scale of 1 (not very important) to 5 (very important), please rate how important discussion of these aspects of treatment are\**



\*8 out of 11 patients surveyed responded to this question.

**5) Are there any additional aspects relating to their actinic keratosis and/or their treatment that your patient feels are important to discuss?**

The inconvenience and difficulty of avoiding sun exposure during outdoor treatment - it is difficult to cover up areas that are not being treated for the duration of UV-required treatment
The availability of a "rescue" contact in case of inflammation
The patient fears to manage by themselves should a strong inflammatory reaction occur
The safety or toxicity of the drug
Reassurance and explanations of effects of actinic keratosis, including life expectancy
Doctors should offer full skin checks to ensure early detection of skin cancers
Duration of treatment cycle and post-treatment recovery, including follow-up appointments
When can the patient begin to socialize again?
Reduce number of lesions and stop progression to malignancy
Sun protection
Proactive treatment options
Frequency of treatment follow-up and disease surveillance appointments
Improve cosmetic appearance

# Acta Dermato-Venereologica. Literature search

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## Research questions

- 1. What is the natural history of actinic keratosis (AK) development?**
  - What is the evidence for progression to squamous cell carcinoma (SCC) with vs without treatment of field of cancerisation?
  - Are there any differences in patients who are immunosuppressed vs immunocompetent?
- 2. What is the evidence for risk factors for developing AK and SCC?**
  - Which patients are most at risk?
  - Are there any documented markers for field of cancerisation?
- 3. What is the evidence for prevention of AK using sun protection?**
  - Is there any evidence specifically for vulnerable patients (particularly organ transplant recipients (OTRs))?
- 4. What are the current treatment goals and targets in AK?**
  - To what extent are patient factors included?
  - To what extent are early/prophylactic treatment or long-term outcomes included?
  - Do goals and targets differ for patients who are immunosuppressed vs immunocompetent? If so, how?
- 5. Which AK treatments have been approved in Europe since 2015?\***
- 6. What are the current challenges and barriers in effective AK treatment?**
- 7. What are the current recommendations and evidence for AK treatment in immunosuppressed patients?**
- 8. What are the factors that matter to patients in AK treatments?**
- 9. What do existing expert consensus projects say about AK?**
- 10. What tools or aids already exist to help physicians personalise treatment for patients with AK?**

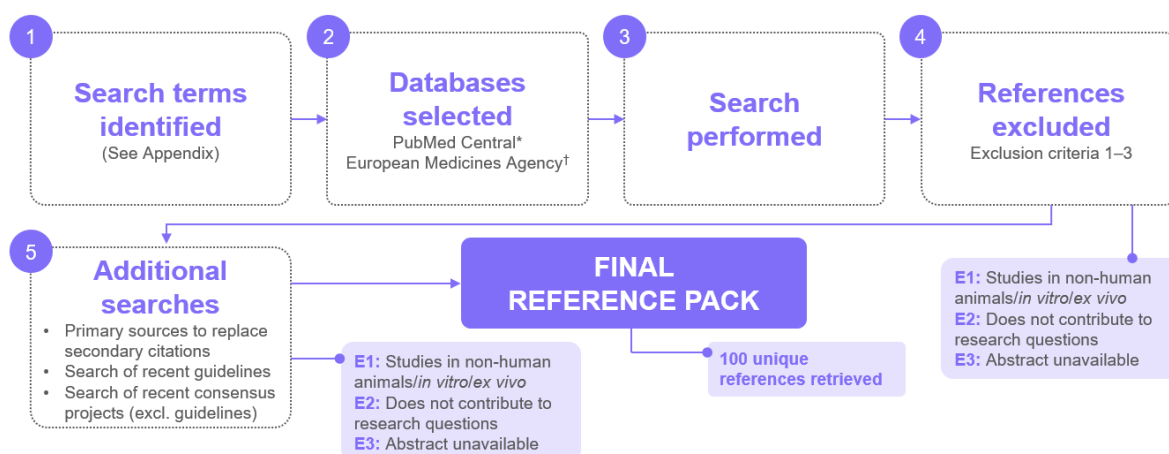
\* EADV/ILDS guidelines last updated in September 2015.

## Methodology

Searches were conducted using the PubMed Central and European Medicines Agency databases in August 2021, restricted to articles published in the English language. References were excluded if they were in non-human animals/*in vitro/ex vivo* or did not

contribute to the research questions. After an initial search, additional searches were conducted to retrieve primary sources to replace secondary citations and to search recent guidelines and consensus projects; a total of 100 unique references were retrieved. The search process is shown in Supplementary Figure 1 and search terms in Supplementary Figure 2.

## Supplementary Figure 1: Literature search methodology



\*Key Research Questions 1–3 and 5–8; †Key Research Question 4 only.

## Supplementary Figure 2: Search terms

Note: No table of search terms is available for Key Research Question 5 (‘Which AK treatments have been approved in Europe since 2015?’), which was performed in the European Medicines Agency database for treatments indicated for AK since 2015.

Search no.	Search	Hits
<b>What is the natural history of AK development?</b>		
1	(actinic keratosis[Title]) AND ("progression" AND "squamous cell carcinoma" AND "field cancerization") Search 2009–2021	13
<b>What is the evidence for risk factors for developing AK and SCC?</b>		
1	(actinic keratosis[Title]) AND ("risk factors" AND "development") Search 2015–2021	11
<b>What is the evidence for prevention of AK using sun protection?</b>		
1	(actinic keratosis[Title]) AND ("sun protection" OR "sunscreen" OR "SPF")	33
2	("organ transplant" OR "immunosuppressed") AND ("SPF" OR "sunscreen" OR "sun protection")	85
<b>What are the current treatment goals and targets in AK?</b>		
1	(actinic keratosis[Title]) AND ("patient-reported outcome")	7



Search no.	Search	Hits
2	(actinic keratosis[Title]) AND ("treatment" AND "early" OR "prophylactic" OR "long-term") Search 2015–2021, Review	19
3	(actinic keratosis[Title]) AND ("treatment" AND "immunocompromised") Search 2009–2021	6
<b><i>What are the current challenges and barriers in effective AK treatment?</i></b>		
1	(actinic keratosis[Title]) AND (treatment[Title]) AND ("challenge" OR "limitation")	6
<b><i>What are the current recommendations and evidence for AK treatment in immunosuppressed patients?</i></b>		
1	(actinic keratosis[Title]) AND ("treatment" AND "immunocompromised") Search 2009–2021	6
<b><i>What are the factors that matter to patients in AK treatments?</i></b>		
1	(actinic keratosis[Title]) AND (treatment[Title]) AND ("patient preference")	7
2	(actinic keratosis[Title]) AND ("patient-reported outcome")	7
<b><i>What do existing expert consensus projects say about AK?</i></b>		
1	(actinic keratosis[Title]) AND (consensus) Search 2011–2021	38
<b><i>What tools or aids already exist to help physicians personalise treatment for patients with AK?</i></b>		
1	(actinic keratosis[Title]) AND (tool) AND (personalise)	18

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## **What tools or aids already exist to help physicians personalise treatment for patients with AK?**

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**Supporting information to Morton CA, *et al.* Expert Recommendations on Facilitating Personalized Approaches to Long-term Management of Actinic Keratosis: The Personalizing Actinic Keratosis Treatment (PAKT) Project**

This document lists the consensus statements, multiple-choice statements, and their voting results from the Delphi e-surveys conducted for the Personalizing Actinic Keratosis Treatment (PAKT) project.

Consensus threshold was  $\geq 75\%$  voting 'agree' or 'strongly agree'. Statements in grey text did not meet consensus threshold. These were refined and voted upon in the subsequent survey.

Note that n values for each statement may not be the same, depending on the number of panellists who voted or chose to abstain on that particular question.

Question numbers may not be sequential, as a number of open-ended questions were also included in the e-surveys to gather information for subsequent rounds of voting.



**Expert Recommendations on Facilitating Personalized Approaches to Long-term Management of Actinic Keratosis: The Personalizing Actinic Keratosis Treatment (PAKT) Project (e-survey 1 consensus statements)**

Consensus statement	Strongly disagree (n)	Disagree (n)	Agree (n)	Strongly agree (n)	Abstain/Unable to answer (n)	Agreement (%)
<b>Q12. What do you consider to be the goal(s) of treatment for AK? Please select all that apply.</b>						
Removal of lesion(s)						91.7
Improving skin appearance						75.0
Reducing the risk of lesion recurrence						83.3
Reducing the risk of progression to squamous cell carcinoma (SCC)						91.7
Clearing/controlling the field of cancerisation						100.0
Reducing the impact of the disease on the patient						91.7
Minimising local skin reactions						58.3
Minimising unsightly cosmetic effects						58.3
Minimising cost						50.0
Other (please specify below)						25.0
<b>Q22. Which of the following factors would you consider important when determining suitable AK treatment(s) for an individual patient? Please select all that apply.</b>						
Treatment frequency						75.0
Treatment duration						100.0
Ability to treat large fields of cancerisation						83.3
Patient's risk of progression to SCC						91.7
Patient's comorbidities						83.3
Patient's lifestyle						75.0
Patient's occupation						75.0
Patient's skin phototype						66.7
Patient's current sun exposure						66.7
Patient's historical sun exposure						66.7
Location of lesion(s)						100.0
Extent of lesion(s)						100.0
Aesthetic/cosmetic concerns						66.7
Individual cost of one-time treatment						50.0
Cumulative cost of treatment over the long-term						50.0
Logistics (e.g. follow-up consultations)						75.0
Quality of life						66.7
Patient preferences						91.7
Other (please specify below)						0.0
<b>Q26. What factors are involved in the ongoing management of your patients with AK? Please select all that apply.</b>						
Need for subsequent treatments influencing current treatment choice						75.0
Patient's risk of progression to SCC						91.7
Follow-up frequency required						66.7
Prevention of further photodamage or new lesion development						83.3
Patient's previous adherence to treatment						91.7
Patient's previous experiences with treatment						100.0
Patient's lifestyle						58.3
Choice of lesion-directed vs field-directed treatment						91.7
Other (please specify below)						8.3
<b>Q33. Which of the following tools do you believe would be of use when formulating a personalised AK management plan? Please select all that apply.</b>						
Photographs/visual imagery						66.7
Primary care practitioner education within a patient-centric framework						66.7
Dermatologist education within a patient-centric framework						66.7
Other specialist education within a patient-centric framework						25.0
Patient education						75.0
Treatment decision aids						66.7
Specific phrasing during consultations						33.3
Other (please specify below)						0.0
<b>Q35. Which of the following aspects of AK management (if any) do you believe can be enhanced with the use of photographs/visual imagery? Please select all that apply.</b>						
Discussion of AK progression						58.3
Discussion of AK severity						50.0
Encouraging patients to adopt a more positive approach to treatment						50.0
Improving adherence to treatment						75.0
Providing realistic expectations of treatment						75.0
Discussion of response to treatment						58.3
None						8.3
Other (please specify below)						0.0
<b>Q36. Which of the following barriers to AK treatment (if any) do you believe may be overcome using patient-centric education? Please select all that apply.</b>						
Poor disease awareness by primary care practitioners						58.3
Poor disease awareness by dermatologists						25.0
Poor disease awareness by other specialists						41.7
Poor disease awareness by patients						83.3
Cosmetic concerns						33.3
Local skin responses						91.7
Treatment-related side effects						83.3
Cost						41.7
Inadequate adherence						75.0
None						0.0
Other (please specify below)						0.0
<b>Q37. Which questions do you believe are useful in aiding AK treatment decisions (if any)? Please select all that apply.</b>						
What is the treatment process?						75.0
What are the advantages of the treatment?						75.0
What are the goals of treatment?						83.3
How effective is the treatment?						91.7
What are the adverse effects of the treatment?						91.7
What are the costs of the treatment?						50.0
What is the duration of treatment application?						91.7
Are multiple treatments or applications required?						83.3
Is the treatment done at home or by the physician?						83.3
What is the frequency of physician visits for the treatment?						66.7
Will skin to return to normal appearance, and if so, how long will that take?						91.7
None						0.0
Other (please specify below)						0.0

**Expert Recommendations on Facilitating Personalized Approaches to Long-term Management of Actinic Keratosis: The Personalizing Actinic Keratosis Treatment (PAKT) Project (e-survey 2 consensus statements)**

Consensus statement	Strongly disagree (n)	Disagree (n)	Agree (n)	Strongly agree (n)	Abstain/Unable to answer (n)	Agreement (%)
<b>Q2. Which of the following would you consider to be significant barriers to optimal patient outcomes in actinic keratosis (AK)? Please select all that apply. If you select 'Other', please explain in the comment box.</b>						
<b>Poor patient adherence to AK treatments</b>						83.3
Difficulty determining the risk of AK lesion transition to SCC						58.3
Lack of follow-up for uncleared lesions						50.0
Lack of sequential treatment for uncleared lesions						66.7
Adverse events with prior AK treatment						58.3
Poor tolerability of prior AK treatment						58.3
<b>The chronic nature of AK</b>						75.0
Lack of patient education regarding the progression of AK						66.7
Lack of patient education regarding the available treatment options						58.3
Lack of primary care physician education regarding the progression of AK						58.3
Lack of primary care physician education regarding the available treatment options						58.3
Lack of dermatologist education regarding the progression of AK						25.0
Lack of dermatologist education regarding the available treatment options						25.0
Other						25.0
<b>Q3. Which of the following would you consider to be a gap in currently available clinical practice guidelines for the management of AK? Please select all that apply. If you select 'Other', please explain in the comment box.</b>						
Acknowledgement of factors that can be useful to tailor treatment to patients						58.3
<b>How to take patient-specific factors into consideration when tailoring AK treatments</b>						75.0
Clear indication of which treatments can be used as field-directed therapy						33.3
Clear indication of which treatments can be used for lesion-directed therapy						25.0
Guidance on communicating AK treatments to patients						50.0
<b>Guidance on managing poor patient adherence to AK treatments</b>						75.0
Other						8.3
<b>Q4. Please rate your level of agreement with the following statement: 'Treatment goals in AK should account for a number of factors related to both the patient and the available treatment options'. Please select one. If you choose 'Abstain/Unable to answer', please explain in the comment box.</b>	0	0	0	12	0	100.0
<b>Q5. Please rate your level of agreement with the following statement: 'Treatment goals in AK should be tailored according to the individual patient'. Please select one. If you choose 'Abstain/Unable to answer', please explain in the comment box.</b>	0	0	0	12	0	100.0
<b>Q6. Please rate your level of agreement with the following statement: 'Patient preference is one of the most important factors to consider when setting treatment goals'. Please select one. If you choose 'Abstain/Unable to answer', please explain in the comment box.</b>	0	3	6	3	0	75.0
<b>Q8. Which of the following factors would influence your choice of treatment, once you have decided in conjunction with the patient to treat AK? Please select all that apply. If you select 'Other', please explain in the comment box.</b>						
History of SCC						91.7
High risk of lesion progression to SCC						91.7
Immunosuppression status						100.0
Extent of sun damage						83.3
Patient's comorbidities						58.3
Presence of scarring						41.7
Lesion causing pain and/or discomfort						83.3
Number of lesions						91.7
Distribution of lesions						75.0
Location of lesions						66.7
Patient's history of previous surgeries						25.0
Patient's preferences for treatment						91.7
Patient's previous experience of treatment						83.3
Patient's previous adherence to treatment						91.7
Patient's previous response to treatment						91.7
Other						0.0
<b>Q9. Which of the following factors are you more likely to take into consideration when treating AK in immunosuppressed patients compared with immunocompetent patients? Please select all that apply. If you select 'Other', please explain in the comment box. Please also note that the use of the term 'immunosuppressed' here, and in following questions throughout this survey, refers to patients who are receiving immunosuppressant medications (e.g. following an organ transplant) or to patients who may be significantly and chronically immunocompromised for other reasons.</b>						
Frequency of follow-up required						66.7
Treatments with demonstrated efficacy in immunosuppressed populations						100.0
Treatments with demonstrated safety profiles in immunosuppressed populations						83.3
Treatments with demonstrated tolerability in immunosuppressed populations						66.7
The need to treat the field of cancerisation rather than individual lesions						100.0
The number of AK lesions						75.0
Frequency of treatment application						25.0
Treatment modality						33.3
Extent of disease progression						66.7
Short-term cost (where applicable)						8.3
Long-term cost (where applicable)						0.0
Other						8.3
<b>Q10. Which of the following factors would influence how you determine follow-up schedules for your AK patients? Please select all that apply. If you select 'Other', please explain in the comment box.</b>						
Previous AK history						75.0
Previous non-melanoma skin cancer (NMSC) history						91.7
Immunosuppression status						91.7
Patient's willingness to undergo treatment						25.0
Patient's understanding of disease chronicity						25.0
Other						0.0
<b>Q13. In which of the following scenarios would you choose not to treat AK and/or the field of cancerisation with any treatments? Please select all that apply. If you select 'Other', please explain in the comment box.</b>						
Patient's previous history of AK						0.0
Patient's ability to tolerate the treatment						25.0
History of adverse events with previous treatments						25.0
Frail patient						66.7
Patients aged ≥80 years						0.0
Patients aged ≥90 years						33.3
Patient has other comorbidities that necessitate treatment first						83.3
Patient has a limited life expectancy						91.7
Patient is experiencing limited discomfort from lesion(s)						41.7
Patient preference not to treat						83.3
Presence of single or very few (<5) lesions						41.7
Limited or no evidence of photodamage						33.3
Other						0.0
<b>Q16. Please rate your level of agreement with the following statement: 'Determining suitable AK treatment for an individual patient requires consideration of multiple factors related to the patient and the treatment'. Please select one. If you choose 'Abstain/Unable to answer', please explain in the comment box.</b>	0	1	0	11	0	91.7
<b>Q29. Which of the following would you consider to be an optimal treatment choice for AK in immunosuppressed patients? Please comment against all that you consider relevant. For each treatment you select, please describe any patient factors you would consider particularly well-suited (e.g. patient specifies a strong preference, has certain comorbidities, has specific practical considerations).</b>						
5-fluorouracil in salicylic acid 10% lacquer						58.3
5-fluorouracil 5% cream						91.7
Diolofenac sodium 3% in hyaluronic acid 2.5% gel						58.3
Imiquimod 5% cream						83.3
Imiquimod 3.75% cream						66.7
Tibamulin 10 mg/g ointment						66.7
Red-light photodynamic therapy (PDT) with aminolevulinic acid (ALA) 78 mg/g gel						66.7
Red-light PDT with methylaminolevulinic acid (MAL) 160mg/g cream						83.3



**Expert Recommendations on Facilitating Personalized Approaches to Long-term Management of Actinic Keratosis: The Personalizing Actinic Keratosis Treatment (PAKT) Project (e-survey 3 consensus statements)**

Consensus statement	Strongly disagree (n)	Disagree (n)	Agree (n)	Strongly agree (n)	Abstain/Unable to answer (n)	Agreement (%)
Q2. To what extent do you agree with the following statement: <b>'Current clinical practice guidelines do not offer practical ways to account for patient-specific factors when tailoring AK treatments'</b> ? Please select one. If you choose 'Abstain/Unable to answer', please explain in the comment box.	0	1	5	5	1	90.9
Q3. To what extent do you agree with the following statement: <b>'Current clinical practice guidelines provide limited guidance for managing poor patient adherence to AK treatments'</b> ? Please select one. If you choose 'Abstain/Unable to answer', please explain in the comment box.	0	0	3	9	0	100.0
Q4. To what extent do you agree with the following statement: <b>'Current clinical practice guidelines do not provide clear, practical guidance for selecting field- vs. lesion-directed treatments'</b> ? Please select one. If you choose 'Abstain/Unable to answer', please explain in the comment box.	0	5	7	0	0	58.3
Q5. To what extent do you agree with the following statement: <b>'It is important to set realistic expectations of treatment outcomes with patients'</b> ? Please select one. If you choose 'Abstain/Unable to answer', please explain in the comment box.	0	1	1	10	0	91.7
Q8. Which of the following factors do you take into consideration when tailoring AK treatment goals for individual patients? Please select all that apply. If you select 'Other', please explain in the comment box.						
Previous non-melanoma skin cancer (NMSC) history						100.0
Previous AK history						100.0
Immunosuppression status						100.0
Patient's comorbidities						75.0
Patient's and/or caregiver's preferences for treatment						83.3
Patient's willingness to undergo treatment						100.0
Patient's previous experience of treatment						83.3
Patient's previous response to treatment						100.0
Patient's ability to tolerate treatment						100.0
Patient's understanding of disease chronicity						83.3
Patient's desire for good cosmetic outcomes						100.0
Other						0.0
Q14. To what extent do you agree with the following statement: <b>'The economic limitations of local healthcare systems can be a barrier to optimal patient outcomes in AK'</b> ? Please select one. If you choose 'Abstain/Unable to answer', please explain in the comment box.	1	1	4	6	0	83.3
Q15. To what extent do you agree with the following statement: <b>'Out-of-pocket costs to patients can be a barrier to optimal patient outcomes in AK'</b> ? Please try to consider this statement broadly and not in relation to your local healthcare system. Please select one. If you choose 'Abstain/Unable to answer', please explain in the comment box.	0	1	6	5	0	91.7
Q18. Which of the following factors would influence your choice to increase the frequency of treatment follow-up appointments with your AK patients? Please select all that apply. If you select 'Other', please explain in the comment box.						
Severity of disease						91.7
Extent of disease progression						83.3
Chronicity of disease						25.0
Immunosuppression status						100.0
History of NMSC						83.3
Treatment modality						25.0
Presence of field cancerisation						58.3
Extent of field cancerisation						91.7
Treatment modality						16.7
Comorbidities						8.3
Other						0.0
Q19. Which of the following factors would influence your choice to increase the duration of the total treatment follow-up period with your AK patients? Please select all that apply. If you select 'Other', please explain in the comment box.						
Severity of disease						91.7
Extent of disease progression						83.3
Chronicity of disease						41.7
Immunosuppression status						100.0
History of NMSC						75.0
Treatment modality						41.7
Presence of field cancerisation						58.3
Extent of field cancerisation						75.0
Treatment modality						16.7
Comorbidities						16.7
Other						0.0
Q21. To what extent do you agree with the following statement: <b>'In patients with comorbidities that necessitate treatment first, the choice may be made to forego or delay AK treatment'</b> ? Please select one. If you choose 'Abstain/Unable to answer, please explain in the comment box.	0	0	4	8	0	100.0
Q22. To what extent do you agree with the following statement: <b>'For patients with a limited life expectancy, the choice may be made to forego AK treatment'</b> ? Please select one. If you choose 'Abstain/Unable to answer, please explain in the comment box.	0	0	5	6	1	100.0
Q23. To what extent do you agree with the following statement: <b>'For patients that express a preference to not be treated, the choice may be made to forego or delay AK treatment'</b> ? Please select one. If you choose 'Abstain/Unable to answer, please explain in the comment box.	0	1	9	2	0	91.7
Q24. In which of the following scenarios may you choose to discontinue AK treatment? Please select all that apply. If you select 'Other', please explain in the comment box.						
Patient has a limited life expectancy						91.7
Patient preference for treatment discontinuation						91.7
Patient experiencing limited discomfort from lesions						0.0
Patient has comorbidities that necessitate treatment first						91.7
Patient's ability to tolerate treatment						50.0
Frail patient						66.7
Other						0.0
Q27. Which of the following factors do you believe contribute towards the level of patient satisfaction with AK treatment? Please select all that apply. If you select 'Other', please explain in the comment box.						
Patient's tolerance of treatment						91.7
High lesion clearance rate						75.0
Fewer repeat treatment sessions/visits						66.7
Shorter treatment duration						75.0
Patient's understanding of disease chronicity						58.3
Patient's concept of treatment efficacy						66.7
Follow-up from the physician						33.3
End cosmetic result						75.0
Financial impact on patient (direct treatment costs)						66.7
Financial impact on patient (indirect costs)						33.3
Other						0.0

<b>Q32. Which of the following post-treatment adjunctive therapies do you choose for your AK patients? Please select all that apply. If you select 'Other', please explain in the comment box.</b>							
<b>Sun protection measures (e.g. sunscreens)</b>							<b>100.0</b>
Nicotinamide							50.0
Other vitamin supplementation (e.g. vitamin D3; excluding nicotinamide)							16.7
Moisturisers							58.3
Urea-based creams							41.7
Keratolytic agents (e.g. salicylic acid)							41.7
Topical retinoids (e.g. acitretin)							33.3
Procedural treatment (e.g. laser)							33.3
Other							8.3
<b>Q33. To what extent do you agree with the following statement: 'Sun protection measures (e.g. sunscreens) should be used by patients throughout the AK journey'? Please select one. If you choose Abstain/Unable to answer, please explain in the comment box.</b>	0	0	0	12	0		<b>100.0</b>
<b>Q138. To what extent do you agree with the following statement: 'In high-risk patient populations (e.g. immunosuppressed patients), AK treatment decisions should be primarily driven by patient-specific factors'? Please select one. If you choose Abstain/Unable to answer, please explain in the comment box.</b>	0	2	5	5	0		<b>83.3</b>
<b>Q139. To what extent do you agree with the following statement: 'In high-risk patient populations (e.g. immunosuppressed patients), AK treatment efficacy should be prioritised'? Please select one. If you choose Abstain/Unable to answer, please explain in the comment box.</b>	1	0	4	7	0		<b>91.7</b>
<b>Q140. To what extent do you agree with the following statement: 'In high-risk patient populations (e.g. immunosuppressed patients), AK treatment decisions should be selected based on long-term risk mitigation'? Please select one. If you choose Abstain/Unable to answer, please explain in the comment box.</b>	0	0	4	8	0		<b>100.0</b>
<b>Q141. To what extent do you agree with the following statement: 'There is a need for effective patient education to improve treatment outcomes in AK patients'? Please select one. If you choose Abstain/Unable to answer, please explain in the comment box.</b>	0	0	5	7	0		<b>100.0</b>
<b>Q143. To what extent do you agree with the following statement: 'Predicting AK lesion progression to SCC is an important gap in AK research'? Please select one. If you choose Abstain/Unable to answer, please explain in the comment box.</b>	0	0	3	9	0		<b>100.0</b>
<b>Q144. To what extent do you agree with the following statement: 'Current research efforts have not focussed on the long-term efficacy of existing AK treatments'? Please select one. If you choose Abstain/Unable to answer, please explain in the comment box.</b>	0	0	7	4	1		<b>100.0</b>
<b>Q145. To what extent do you agree with the following statement: 'Current research efforts have not focussed on the long-term efficacy of preventative AK treatments'? Please select one. If you choose Abstain/Unable to answer, please explain in the comment box.</b>	0	2	3	7	0		<b>83.3</b>

**Expert Recommendations on Facilitating Personalized Approaches to Long-term Management of Actinic Keratosis: The Personalizing Actinic Keratosis Treatment (PAKT) Project (e-survey 4 consensus statements)**

Consensus statement	Strongly disagree (n)	Disagree (n)	Agree (n)	Strongly agree (n)	Abstain/Unable to answer (n)	Agreement (%)
<b>Q2. To what extent do you agree with the following statement: 'Current clinical practice guidelines do not address the chronic nature of AK'? Please select one. If you choose 'Abstain/Unable to answer', please explain in the comment box.</b>	0	1	3	8	1	91.7
<b>Q3. To what extent do you agree with the following statement: 'There is limited consideration for patient priorities and treatment goals in current clinical practice guidelines for AK'? Please select one. If you choose 'Abstain/Unable to answer', please explain in the comment box.</b>	0	0	4	8	0	100.0
<b>Q4. To what extent do you agree with the following statement: 'Current clinical practice guidelines provide limited practical guidance for selecting preventive AK treatments (e.g. sun protection)?' Please select one. If you choose 'Abstain/Unable to answer', please explain in the comment box.</b>	0	1	7	4	0	91.7
<b>Q5. To what extent do you agree with the following statement: 'Good patient understanding of AK disease chronicity can support optimal treatment outcomes'? Please select one. If you choose 'Abstain/Unable to answer', please explain in the comment box.</b>	0	0	2	10	0	100.0
<b>Q6. Which of the following factors do you consider important to discuss with patients to set realistic treatment expectations? Please select all that apply. If you select 'Other', please explain in the comment box.</b>						100.0
Disease severity						75.0
Previous AK history						83.3
Immunosuppression status						75.0
Expected treatment duration						75.0
Expected treatment frequency						91.7
Preventive treatments						58.3
AK lesion distribution						66.7
Patient's comorbidities						58.3
Patient's and/or caregiver's preferences for treatment						75.0
Patient's willingness to undergo treatment						100.0
Patient's previous experience of treatment						75.0
Patient's previous clinical response to treatment						75.0
Patient's ability to tolerate treatment						91.7
Patient's understanding of disease chronicity						83.3
Patient's desire for good cosmetic outcomes						0.0
Other						
<b>Q7. Which of the following factors can increase the risk of scarring in your AK patients? Please select all that apply. If you select 'Other', please explain in the comment box.</b>						100.0
Tissue-destructive treatments (e.g. surgery)						91.7
Non-selective treatments (e.g. cryotherapy)						75.0
Severe disease						66.7
Thick hyperkeratotic lesions (Olsen grade III)						58.3
Higher skin phototypes (IV-VI)						16.7
Prolonged treatment duration						25.0
Repeat treatment cycles targeting the same area						16.7
Inadequate post-treatment follow-up						16.7
Lack of adjunctive therapies						0.0
Other						
<b>Q8. In treatment follow-up appointments, which of the following cosmetic outcomes do you assess? Please select all that apply. If you select 'Other', please explain in the comment box.</b>						91.7
Hypopigmentation						83.3
Hyperpigmentation						50.0
Signs of photoaging (e.g. wrinkles)						66.7
Erythema						66.7
Inflammation						83.3
Scarring						58.3
Swelling						33.3
Skin dryness						50.0
Discolouration						8.3
Other						
<b>Q9. Which of the following would you take into consideration when managing AK in patients with higher skin phototypes (IV-VI)? Please select all that apply. If you select 'Other', please explain in the comment box.</b>						83.3
Previous non-melanoma skin cancer (NMSC) history						58.3
Previous AK history						91.7
Immunosuppression status						66.7
Number of lesions						66.7
Extent of lesions						91.7
Risk of hyperpigmentation with treatment						100.0
Risk of hypopigmentation with treatment						41.7
Costs of treatment						50.0
Choice of sun protection						58.3
Patient's comorbidities						50.0
Patient's and/or caregiver's preferences for treatment						66.7
Patient's willingness to undergo treatment						83.3
Patient's previous experience of treatment						83.3
Patient's previous clinical response to treatment						58.3
Patient's ability to tolerate treatment						66.7
Patient's understanding of disease chronicity						75.0
Patient's desire for good cosmetic outcomes						8.3
Other						
<b>Q11. To what extent do you agree with the following statement: 'The need to re-treat due to lesion recurrence strongly influences my ongoing management of an individual AK patient'? Please select one. If you choose 'Abstain/Unable to answer', please explain in the comment box.</b>	1	1	3	7	0	83.3
<b>Q15. To what extent do you agree with the following statement: 'Preventing further photodamage is a key goal of ongoing management of an individual AK patient'? Please select one. If you choose 'Abstain/Unable to answer', please explain in the comment box.</b>	0	0	3	9	0	100.0
<b>Q16. To what extent do you agree with the following statement: 'Preventing new AK lesion development is a key goal of ongoing management of an individual AK patient'? Please select one. If you choose 'Abstain/Unable to answer', please explain in the comment box.</b>	0	0	6	6	0	100.0

Q17. To what extent do you agree with the following statement: <b>'The individual AK patient's previous experiences with treatment strongly influences their ongoing management'</b> ? Please select one. If you choose 'Abstain/Unable to answer', please explain in the comment box.	0	0	3	9	0	100.0
Q21. Which of the following factors would influence your choice to use a sequential treatment approach (the selection of one treatment followed by another)? Please select all that apply. If you select 'Other', please explain in the comment box.						
Severity of disease						83.3
Extent of disease progression						75.0
Presence of field cancerisation						91.7
Extent of field cancerisation						91.7
Presence of hyperkeratotic lesions (Olsen grade III)						83.3
Immunosuppression status						83.3
Individual treatment failure						75.0
Patient preference for multiple treatment modalities						83.3
Patient's previous response to treatment						75.0
Patient's desire for good cosmetic outcomes						58.33
Other						0
Q24. In e-survey 3, consensus was reached on the following statement: <b>'Sun protection measures (e.g. sunscreens) should be used by patients throughout the AK journey'</b> . In your opinion, which of the following are characteristics of effective sunscreens? Please select all that apply. If you select 'Other', please explain in the comment box.						
Sun protection factor (SPF)>30						100.0
Physical SPF agents						58.3
Chemical SPF agents						66.7
Agents containing DNA repair technology						50.0
Long-term clinical data in high-risk patients (e.g. organ transplant recipients)						75.0
Medical device status						16.7
Dose standardised applications (e.g. doses administered via pump-bottle)						50.0
Long durability of application						75.0
Sweatproof/waterproof						75.0
Dry-touch						41.7
Non-oily						50.0
Fragrance-free						33.3
Easily applicable						75.0
Non-comedogenic						50.0
Other						0.0
Q25. To what extent do you agree with the following statement: <b>'Sun protection measures should be regularly evaluated throughout the AK journey when individualising care for patients'</b> ? Please select one. If you choose 'Abstain/Unable to answer', please explain in the comment box.	2	0	3	7	0	83.3
Q28. Which of the following would you take into consideration to determine the success of a treatment strategy during treatment follow-up appointments? Please select all that apply. If you select 'Other', please explain in the comment box.						
Reduction in visible AK lesion number						91.7
Actinic Keratosis Area and Severity Index (AKASI) score reduction						58.3
Evidence of good adherence to treatment						58.3
Evidence of good tolerability of treatment						58.3
Patient's satisfaction with cosmetic outcomes						66.7
Clearance of field cancerisation						91.7
Patient's treatment goals achieved						83.3
Reduced follow-up appointment frequency after field-directed treatments						75.0
Other						0.0
Q29. Once you have completed AK treatment follow-up appointments, which of the following factors would influence your decision to carry out appointments for ongoing disease surveillance specifically? Please select all that apply. If you select 'Other', please explain in the comment box.						
Disease severity						83.3
Previous AK history						50.0
Previous NMSC history						100.0
AK lesion distribution						50.0
Immunosuppression status						100.0
Patient's response to treatment						66.7
Patient's comorbidities						66.7
Patient's and/or caregiver's preferences for treatment						25.0
Patient's willingness to undergo treatment						41.7
Patient's previous experience of treatment						25.0
Patient's previous clinical response to treatment						41.7
Patient's ability to tolerate treatment						33.3
Patient's understanding of disease chronicity						58.3
Patient's desire for good cosmetic outcomes						33.3
Other						8.3
Q30. Which of the following would you consider as the goals of treatment for high-risk AK patients? Please select all that apply. If you select 'Other', please explain in the comment box.						
Removal of lesion(s)						58.3
Improving skin appearance						41.7
Reducing the risk of lesion recurrence						58.3
Reducing the risk of progression to SCC						100.0
Clearing/controlling the field of cancerisation						83.3
Reducing the impact of the disease on the patient						75.0
Minimising local skin reactions						33.3
Minimising unsightly cosmetic effects						41.7
Minimising cost						16.7
Other						0.0
Q31. To what extent do you agree with the following statement: <b>'When selecting treatments for high-risk patient populations, AK treatment modality is an important factor to consider'</b> ? Please select one. If you choose 'Abstain/Unable to answer', please explain in the comment box.	0	0	1	11	0	100.0
Q32. To what extent do you agree with the following statement: <b>'When selecting treatments for high-risk patient populations, the frequency of treatment follow-up required is an important factor to consider'</b> ? Please select one. If you choose 'Abstain/Unable to answer', please explain in the comment box.	0	1	5	6	0	91.7
Q33. To what extent do you agree with the following statement: <b>'When selecting treatments for high-risk patient populations, the duration of treatment follow-up required is an important factor to consider'</b> ? Please select one. If you choose 'Abstain/Unable to answer', please explain in the comment box.	0	2	2	7	1	81.8
Q35. To what extent do you agree with the following statement: <b>'Dermatologist-patient discussions are one of the most effective communication channels for educating AK patients about their condition and its management'</b> ? Please select one. If you choose 'Abstain/Unable to answer', please explain in the comment box.	0	0	3	9	0	100.0

Q36. To what extent do you agree with the following statement: 'Primary care/General practitioner –patient discussions are one of the most effective communication channels for educating AK patients about their condition and its management'? Please select one. If you choose 'Abstain/Unable to answer', please explain in the comment box.	0	5	6	1	0	58.3
Q37. To what extent do you agree with the following statement: 'Educational materials for patients (e.g. leaflets) are one of the most effective communication channels for educating AK patients about their condition and its management'? Please select one. If you choose 'Abstain/Unable to answer', please explain in the comment box.	0	5	6	1	0	58.3
Q38. To what extent do you agree with the following statement: 'Visual aids for use by healthcare professionals (e.g. clinical pictures/diagrams) are one of the most effective communication channels for educating AK patients about their condition and its management'? Please select one. If you choose 'Abstain/Unable to answer', please explain in the comment box.	0	1	8	3	0	91.7
Q39. To what extent do you agree with the following statement: 'Social media platforms are one of the most effective communication channels for educating AK patients about their condition and its management'? Please select one. If you choose 'Abstain/Unable to answer', please explain in the comment box.	2	3	6	1	0	58.3
<b>Q45. Which of the following channels do you consider to be the most appropriate for disseminating the recommendations of this consensus? Please select all that apply. If you select 'Other', please explain in the comment box.</b>						
Congress presentations						91.7
Publications (e.g. manuscript)						100.0
Patient information materials						66.7
Online/digital tool						50.0
Social media						33.3
Other						8.3
<b>Q46. Which of the following audience types would you consider the most appropriate for communicating the recommendations of this consensus? Please select all that apply. If you select 'Other', please explain in the comment box.</b>						
Dermatologists						100.0
Primary care providers						91.7
Medical students						16.7
Patients						66.7
Research scientists						0.0
Other						0.0