KSYOS TELEDERMATOLOGY

POTENTIAL IN EUROPE

Prof. Dr. L. Witkamp
KSYOS TeleMedical Centre
230,000 KSYOS TeleConsultations have prevented 180,000 (~70%) physical referrals to the hospital
KSYOS TeleMedical Centre

• KSYOS Health Management Research founded in 2000
• KSYOS TeleMedical Centre founded in 2005
• TeleDermatology Consultation since June 2005
• March 2015: 4,500 GP’s; 2,500 Medical Specialists/paramedics
• March 2015: 270,000 TeleConsultations
• Contracts with all health Insurance companies in NL and NHS in UK
• Pilots in Spain, Norway and Switzerland
• Expanding to TeleDiagnosis, TeleMonitoring and Self Management
KSYOS TeleDermatology
KSYOS TeleOphthalmology
KSYOS TeleCardiology
KSYOS TelePulmonology
As a Health Institution KSYOS delivers within all legal frames:

- Medical definition of the process
- Organization in the region
- KSYOS Electronic Health Record integrated in regional health IT infrastructure
- Digital camera’s, dermatoscopes
- Education, onsite training
- Liability insurance
- Administration and finance
- Helpdesk
- Monitoring
- Reporting of Quality Indicators

KSYOS TeleMedical Centre
Hardware

KSYOS camera

KSYOS dermatoscope

iPhone App

"
iPhone app KSYOS TeleDermatology with direct upload of pictures in KSYOS Electronic Health Record
The TeleDermatology process

a practical case
Process of TeleDermatology

Skin pictures
+ Patient history
+ Medication
+ Specific questions
Process of TeleDermatology

Skin pictures
+ Patient history
+ Medication
+ Specific questions
Process of TeleDermatology

Skin pictures
+ Patient history
+ Medication
+ Specific questions

GP

GP EHR

Dermatologist

< 2 days
Max. 2 rounds

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Would you have referred this patient to a Consultant Dermatologist without TeleDermatology service?

- Yes
- No

Comments

Institution: -- Select Institution --
Consultant:
Practical Case

-Referral Letter GP-

Referral Reason:
Itchy torso and arms, after consumption of gambas. Not familiar with allergies. Locoidcreme didn’t help.
Exanthema and annular desquamation
DD: allergy or pityriasis versicolor?

Comments:
NB: I did not make a test on fungi.
Dear Mr. GeneralPractitioner1,

There is a new message available in your TeleDermatology Consultation service. Please go to https://portal.ksysos.org/tdcs-uk and log on.

Kind regards,

The KSYS team

KSYS TeleMedical Centre
Amsterdamseweg 206
1182 HL Amstelveen
The Netherlands
T: +31(0)20 6000060
F: +31(0)20 2031121
E: info@ksvos.org
http://www.ksvos.org
<table>
<thead>
<tr>
<th>Date</th>
<th>Name</th>
<th>Status</th>
<th>GP</th>
<th>Consultant</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010-10-01 16:13:06</td>
<td>Testperson,</td>
<td>Answered by Consultant</td>
<td>GeneralPractitioner</td>
<td>Test Consultant,</td>
<td>Test Hospital</td>
</tr>
<tr>
<td>0000-00-00 00:00:00</td>
<td>Brown,</td>
<td>Temporarily saved</td>
<td></td>
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</table>
Consult

Patient data
1111111111
Testperson
01-01-1978 Female

Medication
<table>
<thead>
<tr>
<th>no.</th>
<th>Type</th>
<th>Dosage</th>
<th>Since</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Photos
Referral letter
Ref. reason
Itchy torso and arms, after consumption of gambas. Not familiar with allergies. Lochtidecme didn’t help. Exanthema and annular desquamation
Comments
NB: I did not make a test on fungi.

Test Hospital - Test Consultant

Consultant Dermatologist’s report
Description of findings
Erythematous squamous pityriasisiform, partly oval macules and plaques on trunk and arms, partly excoriated.

Diagnosis
Pityriasis rosea (working diagnosis)
DD:
Pityriasis lichenoides acuta/chronica

Additional questions
How was the time relation to the consumption of gambas (gambas usually give a type IV allergic reaction with urticaria and swelling of...)

Treatment recommendations
Heals spontaneously, eventually shortly betametason ointment 1 dd for 1 week for itch, then tapering off. Bloodtest Lues

Do you need to see this patient urgently
Yes
No

GP’s response
Answer/question

Comments

Close  Save  Save and Send

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Consult

Patient data
1111111111 01-01-1978 Female

Testperson

Medication
no. Type Dosage Since
1
2
3

Consultant Dermatologist’s report
Description of findings
Erythematous squamous pityriasisform, partly oval macules and plaques on trunk and arms, partly excoriated.

Diagnosis
Pityriasis rosea (working diagnosis)
DD:
Pityriasis lichenoides acuta/chronica

Additional questions
How was the time relation to the consumption of gambas (gambas usually give a type IV allergic reaction with urticaria and swelling of...

Treatment recommendations
Heals spontaneously, eventually shortly betametason ointment 1dd for 1 week for itch, then tapering off. Bloodtest Lues

Do you need to see this patient urgently? Yes No

GP’s response
Answer/question
Time relation: 8-12 hours after eating gambas

Consultant Dermatologist’s response
Treatment recommendations
Allergic reaction not probable

Comments

Photos
Referral letter
Ref. reason
Itchy torso and arms, after consumption of gambas. Not familiar with allergies. Locoidecream didn’t help. Exantheme and annular desquamation

Comments
NB: I did not make a test on fungi.

Test Hospital - Test Consultant

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<table>
<thead>
<tr>
<th>Evaluation questions</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Will you still refer the patient to a Consultant?</td>
<td>Yes, No</td>
</tr>
<tr>
<td>2. To what degree has the answer from the Consultant helped you?</td>
<td>Not, A little, Average, A lot</td>
</tr>
<tr>
<td>3. Have you learned from this teleconsultation?</td>
<td>Not, A little, Average, A lot</td>
</tr>
</tbody>
</table>

**Consultant Dermatologist’s response**
- **Treatment recommendations**: Allergic reaction not probable

**Patient data**
- ID: 11111111111
- Date of birth: 01-01-1978
- Gender: Female

**Diagnosis**
- DD: Pityriasis lichenoides acuta/chronica

**Answer/question**
- Time relation: 8-12 hours after eating gamba’s

**Consult**
- Photos
- Description of findings
- Medication
- Consultation
- Test person

**Recommendations**
- Do you need to see this patient urgently: Yes, No
- Betamethasone ointment 1% for 1 week, then tapering off. Bloodtest Lues.
Patient data
First name(s): Testperson
Gender: female
Address
Number
Postcode
Town
Date of Birth: 1978-01-01
Email address
Telephone number: undefined
NHS number: 1111111111
Medication
Medication
1
2
3

Photos

Referral letter
Referral reason:

Consultant Dermatologist response
Description of findings:

Diagnosis:

Treatment recommendations:

Additional questions:

Urgent call requested:

GP response
Answer / Question

Consultant Dermatologist report
Treatment recommendations:

Comments:

Allergic reaction not probable

itchy tons and arms, after consumption of gambas. Not familiar with allergies. Locoid cream did not help. Erythema and annular desquamation (DD: allergy or phytaic acid). No, I did not make a test on fungi.

Erythema and annular desquamation (DD: allergy or phytaic acid). No, I did not make a test on fungi.

How was the time relation to the consumption of gambas (gambas usually give a type IV allergic reaction with urticae and swelling of mucosa)? Unprotected sexual contact (DD II)? No.

Heals spontaneously, eventually shortly benzylbenzoate ointment 1% for 1 week for itch, then tapering off.

Bloodtest: Lues
Referral criteria

TeleDermatology can be used:

• To prevent a physical referral
• To get advice for both diagnosis and treatment
• To offer better triage for the patient
• To reduce within lists
Teledermatology applied following patient selection by general practitioners in daily practice improves efficiency and quality of care at lower cost

J.P. van der Heijden, N.F. de Keizer,* J.D. Bos, P.I. Spuls and L. Witkamp†

Departments of Dermatology and *Medical Informatics, Academic Medical Centre, University of Amsterdam, PO Box 22700, 1100 DE Amsterdam, the Netherlands
†KSYOS TeleMedical Centre, Amstelveen, the Netherlands

Summary

Background Teledermatology, the application of telemedicine in the field of dermatology, has similar accuracy and reliability as physical dermatology. Teledermatology has been widely used in daily practice in the Netherlands since 2005 and is fully reimbursed.

Objectives This study prospectively investigated the effect of teledermatology on efficiency, quality and costs of care when integrated in daily practice and applied following patient selection by the general practitioner (GP).

Methods Teledermatology consultations between GP and regional dermatologist were performed in daily GP practice in the Netherlands. Efficiency of care was measured by the decrease in the number of physical referrals to the dermatologist. Quality of care was measured by the percentage of teleconsultations for second opinion, physical referrals resulting from these teleconsultations, the response time of the dermatologists and educational effect experienced by the GP. Costs of conventional healthcare without teledermatology were compared with costs with teledermatology.

Results One thousand, eight hundred and twenty GPs and 166 dermatologists performed teledermatology, and 37,207 teleconsultations performed from March 2007 to September 2010 were included. In the group of patients where the GP...
Avoided referrals

- 73% prevented referrals in group TD for referral prevention
TDC response time

- <1 hrs: 22.1%
- 1 - 2 hrs: 18.3%
- 2 - 3 hrs: 10.2%
- 3 - 4 hrs: 7.6%
- 4 - 5 hrs: 6.8%
- 5 - 6 hrs: 5.6%
- 6 - 7 hrs: 4.3%
- 7 - 8 hrs: 3.2%
- 8 - 9 hrs: 2.7%
- 1 - 1.5 days: 9.9%
- 1.5 - 2 days: 4.1%
- > 2 days: 5.2%
TDC learning effect

- Did you learn from the answer provided by the dermatologist?
- Did the answer provided by the dermatologist help you?
Long Term Effect on physical referrals
Per GP in The Netherlands
Decrease in TDC’s per GP due to learning effect
Decrease in total TDC’s due to learning effect
Results

- 70% of all live referrals could be prevented
- Significant reduction of waiting list
- Average response time 4.6 hours (median 2 hours!).
- 40% cost reduction.
- TeleDermatology enriches GP’s and dermatologists’ work experience.
- Quality improvement and learning effect
Challenges in setting up TeleMedicine services *

Challenge:  
TD with KSYOS:  
Obtaining reimbursement to be resolved in regional setting  
Resolving technical-related issues resolved  
Communicating with referring providers resolved  
Setting up regional operation resolved  
setting up staff education programmes resolved

Reimbursement options

- Government based
- Insurance based
- Patient based
- Hospital based
- Innovation based
- Primary care group based
THANK YOU

Leonard Witkamp
President KSYOS
Professor Academic Medical Centre
l.witkamp@KSYOS.org