

# **Patient-centered Teleconsultation for Cutaneous Wounds: A Feasibility Study**

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declare.

# Purpose

**Wound specialists**

**Teleconsultation  
About Wound  
(directly)**

- **Digital camera**
- **Mobile camera phone**

**Patients**



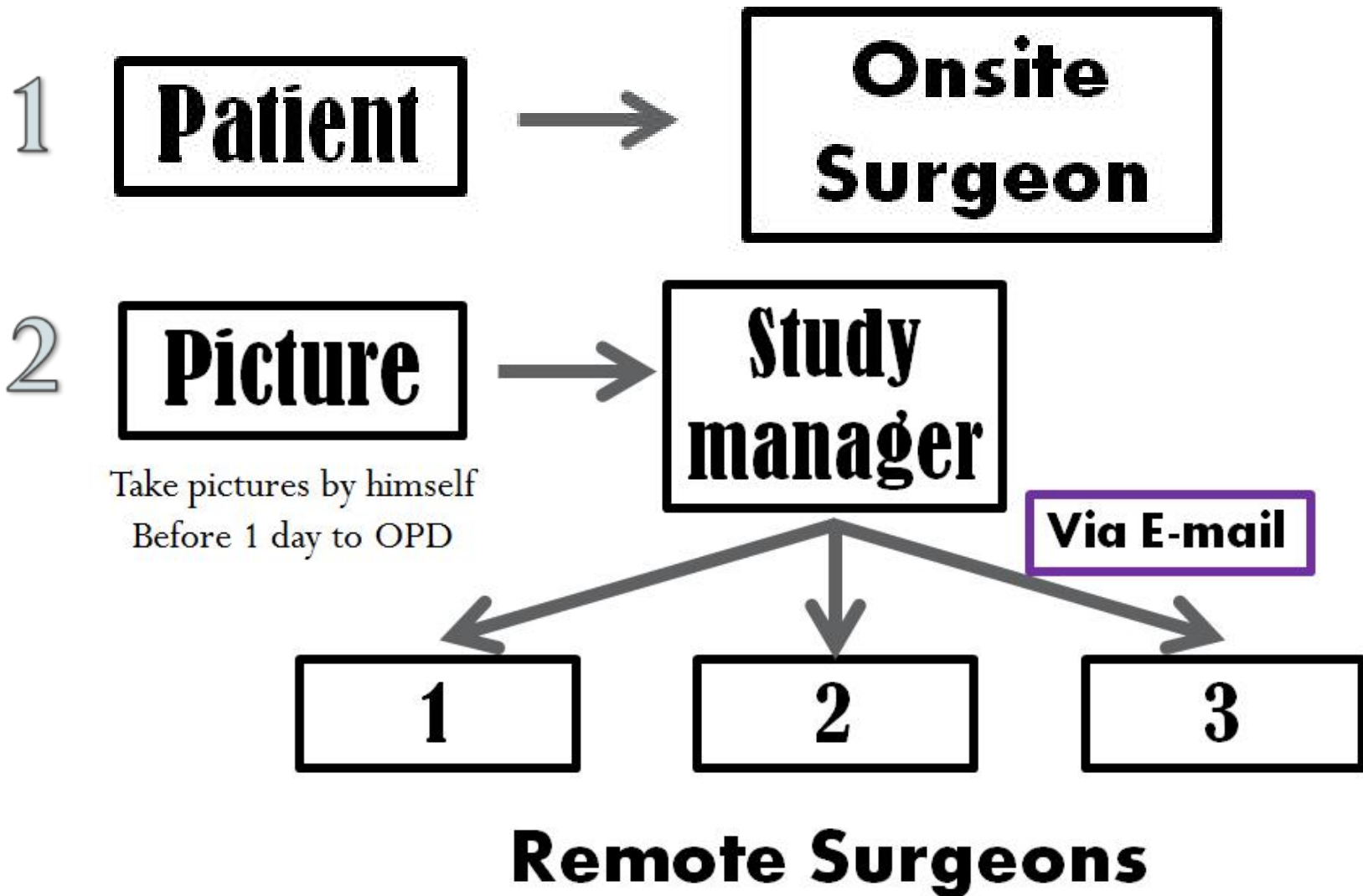
# **Materials and Methods**

⌘ 53 patients

⌘ 2011/7 – 2011/11

⌘ All types of cutaneous wounds

# Materials and Methods



# Questionnaire

<b>Description of wound</b>	<b>Present</b>	<b>Not present</b>
Gangrene		
Necrosis		
Erythema		
Cellulitis/ Infection		
<b>Management of wound</b>	<b>Yes</b>	<b>No</b>
Need for antibiotics?		
Need for debridement?		

# Results (demo photo)



⌘ 76♀

⌘ Pressure  
sore

⌘ Cannon  
300D

- 150M pixels

⌘ Photo  
quality

- 9.7

# Results - distribution of the lesion sites

Lesion Site	Case Number
Face	5
Neck	2
Arm	1
Finger	10
Buttock	2
Thigh	6
Knee	2
Calf	10
Foot	15
<b>Total</b>	<b>53</b>



# Results - etiologies of the cutaneous wounds

<b>Group</b>	<b>Subgroup</b>	<b>Numbers</b>
Acute wound	Abrasion wound	10
	Laceration wound	9
	Burn wound	2
Chronic wound	Pressure sore	3
	DM foot	2
	Static ulceration	1
	Ischemic wound	1
Post- procedure wound	Surgical wound	11
	Skin graft wound	6
	Removal of nail	3
	Post-laser wound	2
Soft tissue infection	Cellulitis	2
	Pustule	1
Total		53

# Results

**K value:** an index of inter-rater agreement between the remote raters on categorical data

	Agreement Percent Among Remote Surgeons(n=53)	Sensitivity	Specificity	Image Misinterpre tation
Description of wound				
Gangrene	83.6%, $\kappa=0.358$	4/7(57%)	45/46(98%)	4/53(8%)
Necrosis	78.6%, $\kappa=0.414$	7/16(44%)	35/37(95%)	11/53(21%)
Erythema	73.6%, $\kappa=0.366$	7/9(78%)	37/44(84%)	9/53(17%)
Cellulitis/ Infection	87.4%, $\kappa=0.463$	5/11(45%)	40/42(95%)	8/53(15%)
Management of wound				
Need for antibiotics?	86.2%, $\kappa=0.473$	5/12(42%)	39/41(95%)	9/53(17%)
Need for debridement?	74.8%, $\kappa=0.367$	5/7(71%)	39/46(85%)	9/53(17%)

# Discussion

- ⌘ No image took by patient themselves in previous articles
  - ⌘ Doctor in local hospital
  - ⌘ Home care nurses
- ⌘ Save patient' s time and cost
- ⌘ Increase quality of life
- ⌘ Save NHI cost

Binder, B., Archives of Dermatology, 2007. 143(12): p. 1511-1514.

# Discussion

Image Misinterpretation	Tsai et al.'s study*	Our study
<b>Description of wound</b>		
Gangrene	8/82 (10%)	4/53(8%)
Necrosis	16/82 (20%)	11/53(21%)
Erythema	26/82 (32%)	9/53(17%)
Cellulitis/ Infection	13/82 (16%)	8/53(15%)
<b>Management of wound</b>		
Need for antibiotics	14/82 (17%)	9/53(17%)
Need for debridement	14/82 (17%)	9/53(17%)

\* Tsai HH, *Ann Plas Surg.* 2004;53:584-587

# Weak point

- ⌘ Take picture 1 day before OPD
  - ⌘ The wound condition maybe change.
- ⌘ Potential medical-legal risks
- ⌘ Potential misdiagnosis
- ⌘ Delay in treatment
- ⌘ Lack of ability to intervene

*Armstrong AW, Arch Dermatol. 2012;148:649-650*

*Edison KE, Arch Dermatol. 2012;148:650-651*

## Conclusions

- ∞ Satisfactory agreement between onsite surgeon and remote surgeons (79.25%-92.45%)
- A patient-centered teleconsultation system based on a save-and forward model is **feasible** for the remote management of cutaneous wounds.