

Informatics, Perception, and Store and Forward Teledermatology

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Store and Forward Teledermatology

- Standardized History
 - Location
 - Duration of presence
 - Change in size
 - Symptoms or signs (pruritis, pain, etc.)
 - Skin cancer history
 - Family history
 - Meds, allergies



Teledermatology Technology

- Digital Camera
- Imager
- Imaging protocol
- Image review for quality control
- Upload images
- Attach standardized history





Surveys

- VA HSR&D IIR 98-159
 - Whited, et al., Telemed J E Health 2004;10:422-31
- Referring clinicians, patients, and dermatologists
- Clinician surveys were anonymous
- Users of both consult modalities

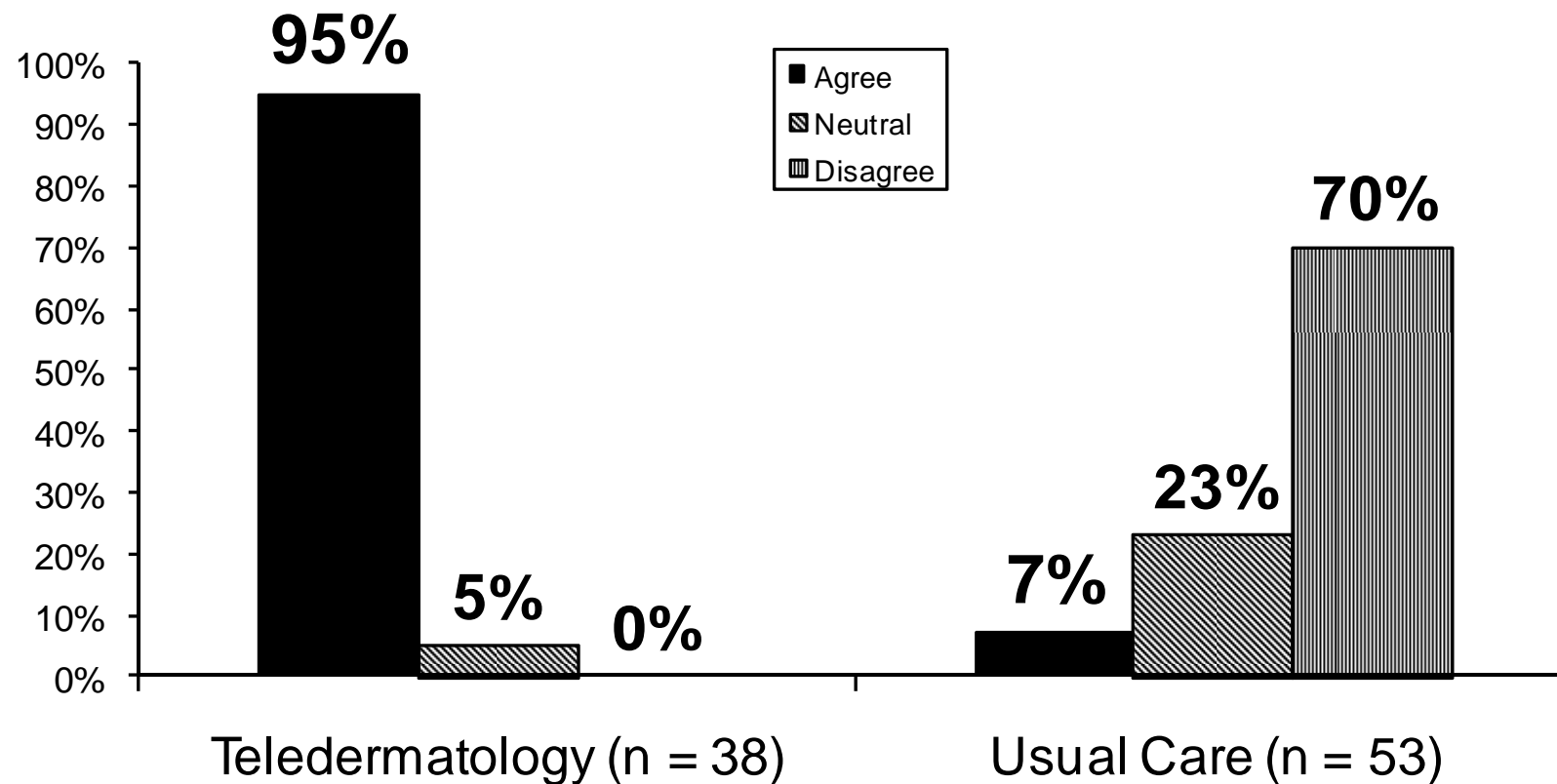


Referring Clinicians

- 60 clinicians referred patients and 53 (88%) completed a survey
- All 53 clinicians completed a usual care survey
- 38 clinicians completed a teledermatology survey

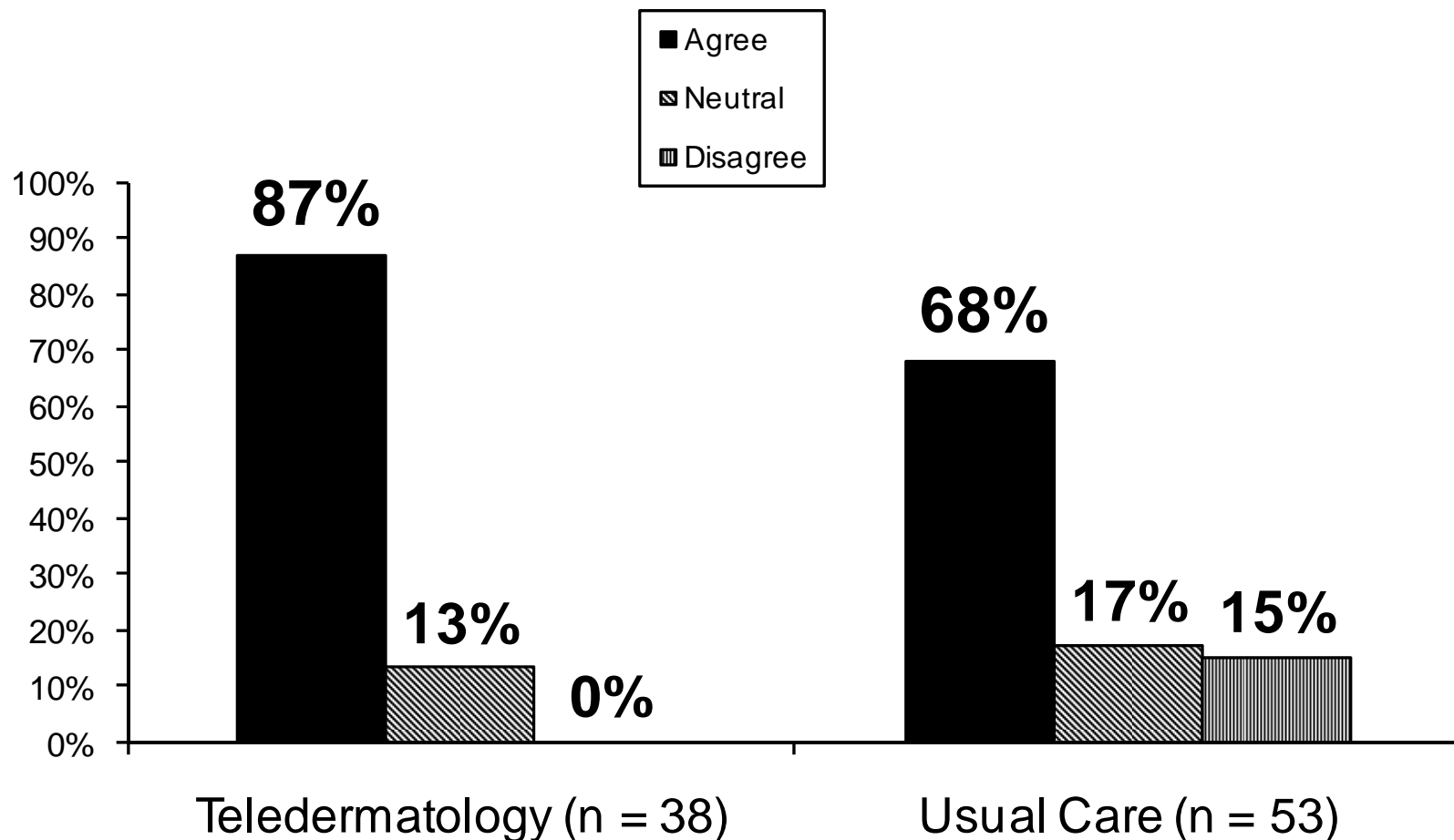
Referring Clinicians

Patients receive timely appointments when referred to dermatology



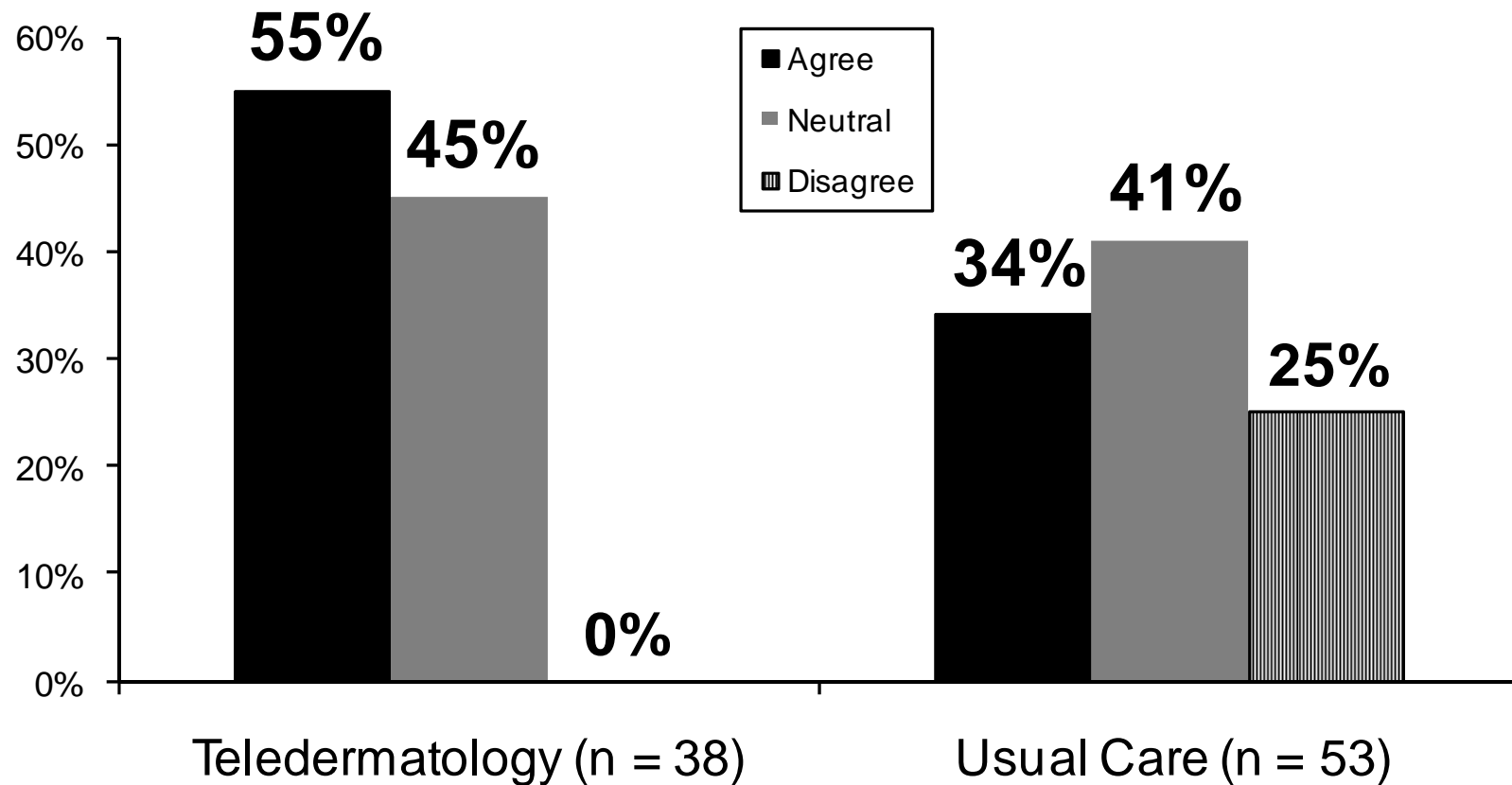
Referring Clinicians

I receive information from the consultant after the patient's appointment



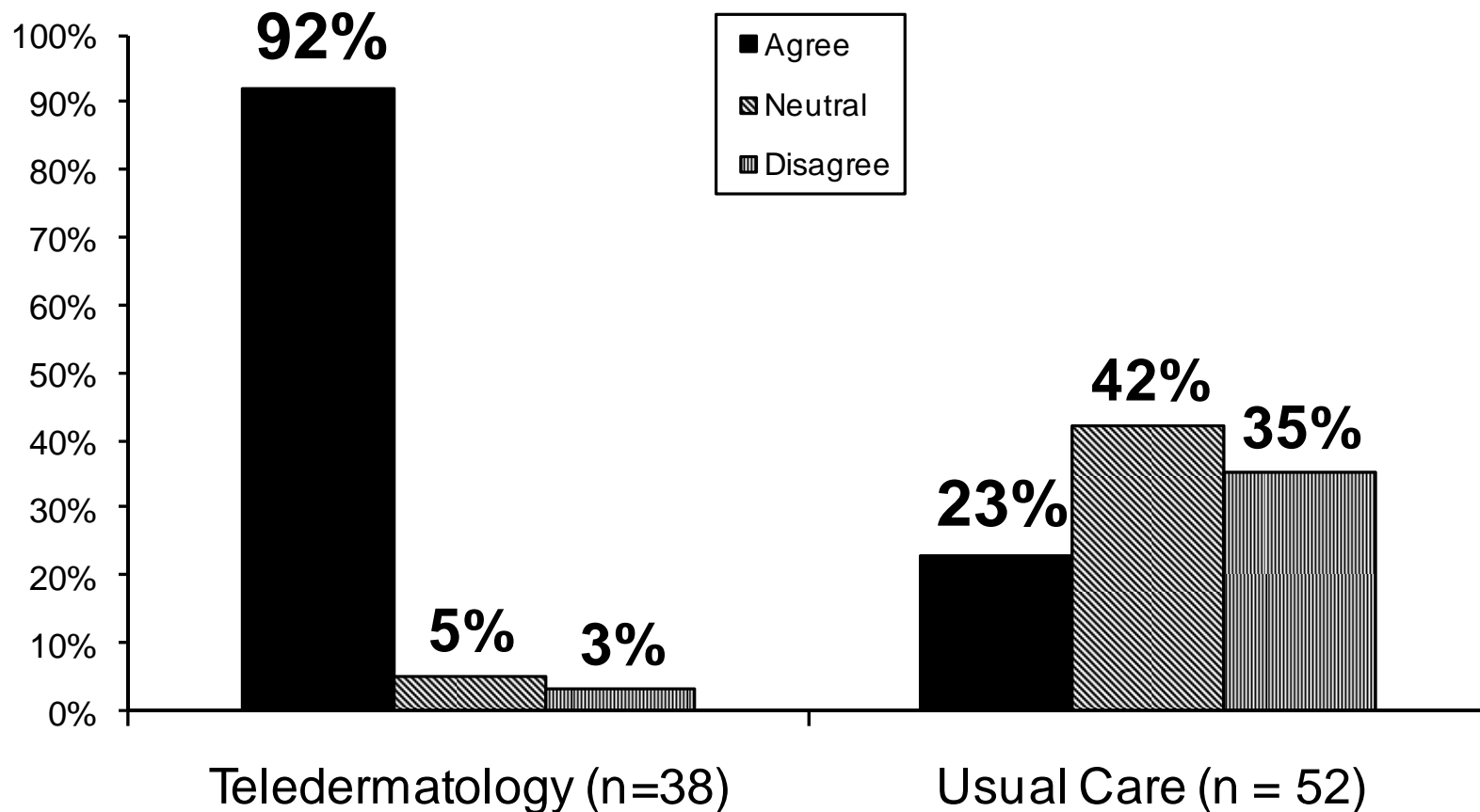
Referring Clinicians

I get an educational benefit from the referral



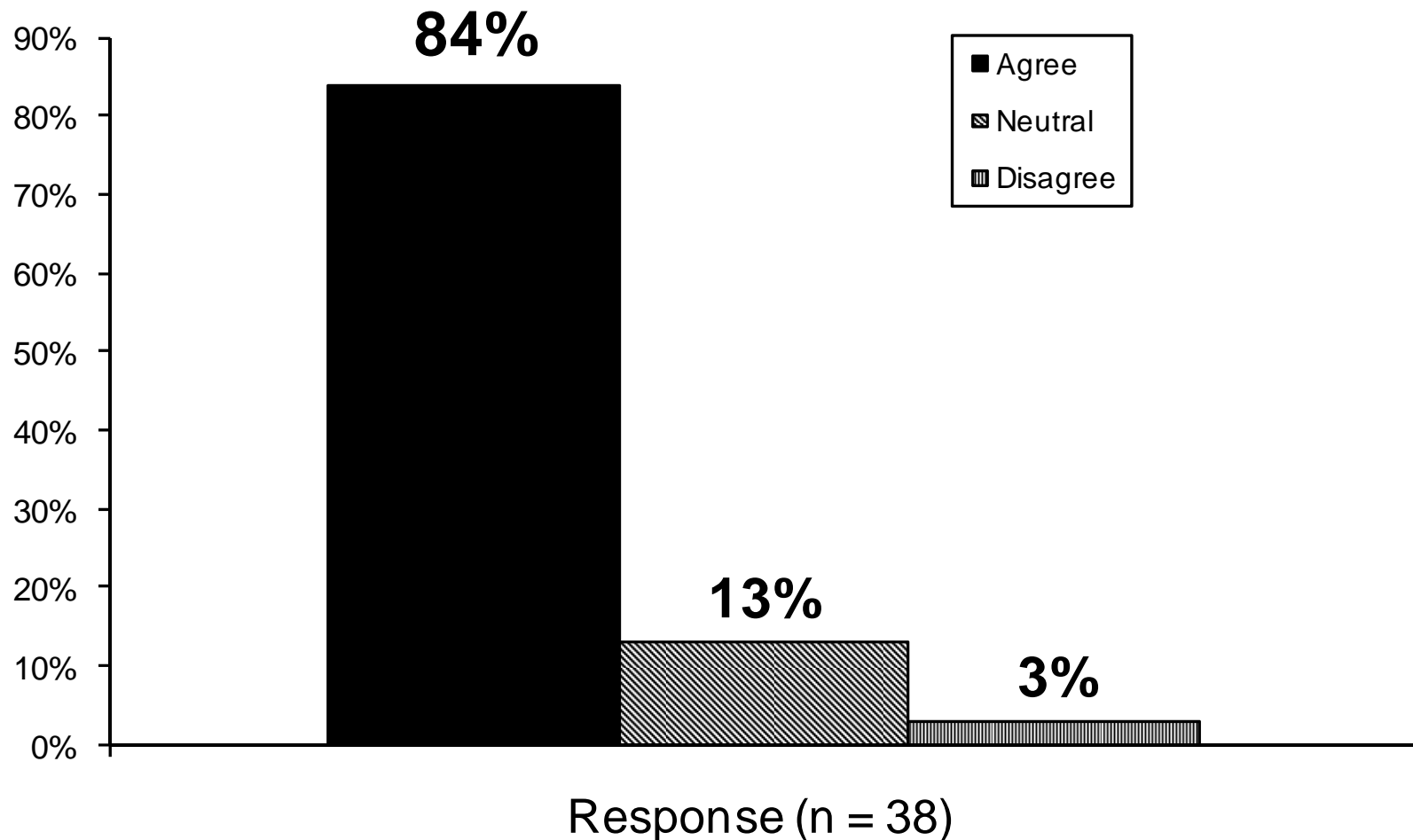
Referring Clinicians

Overall, I am satisfied with the dermatology consult process



Referring Clinicians

I prefer teledermatology consultations to traditional referrals



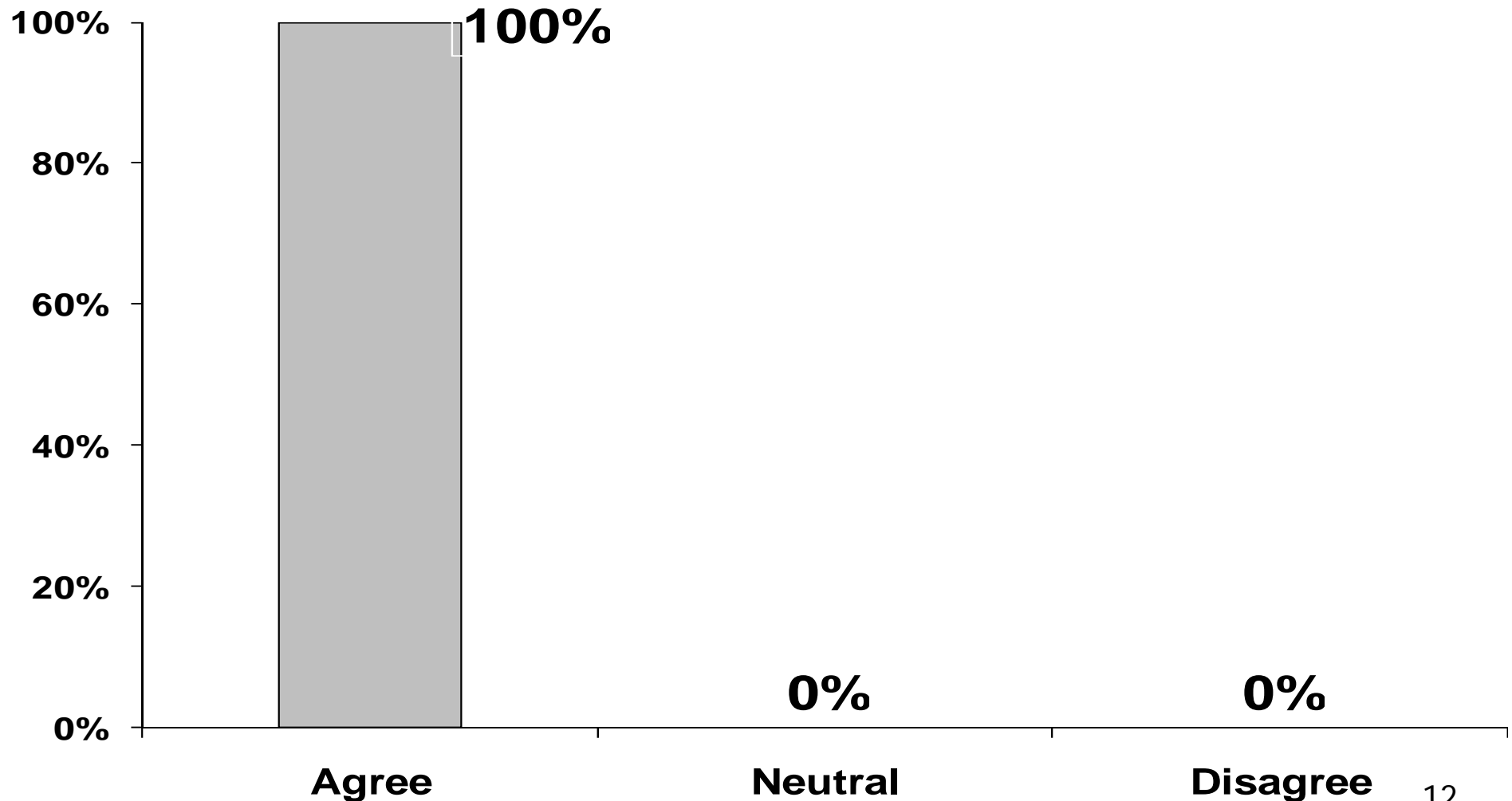
Results

Dermatologists

- 8 resident dermatologists were surveyed
- Attending dermatologist was not surveyed as a study co-investigator

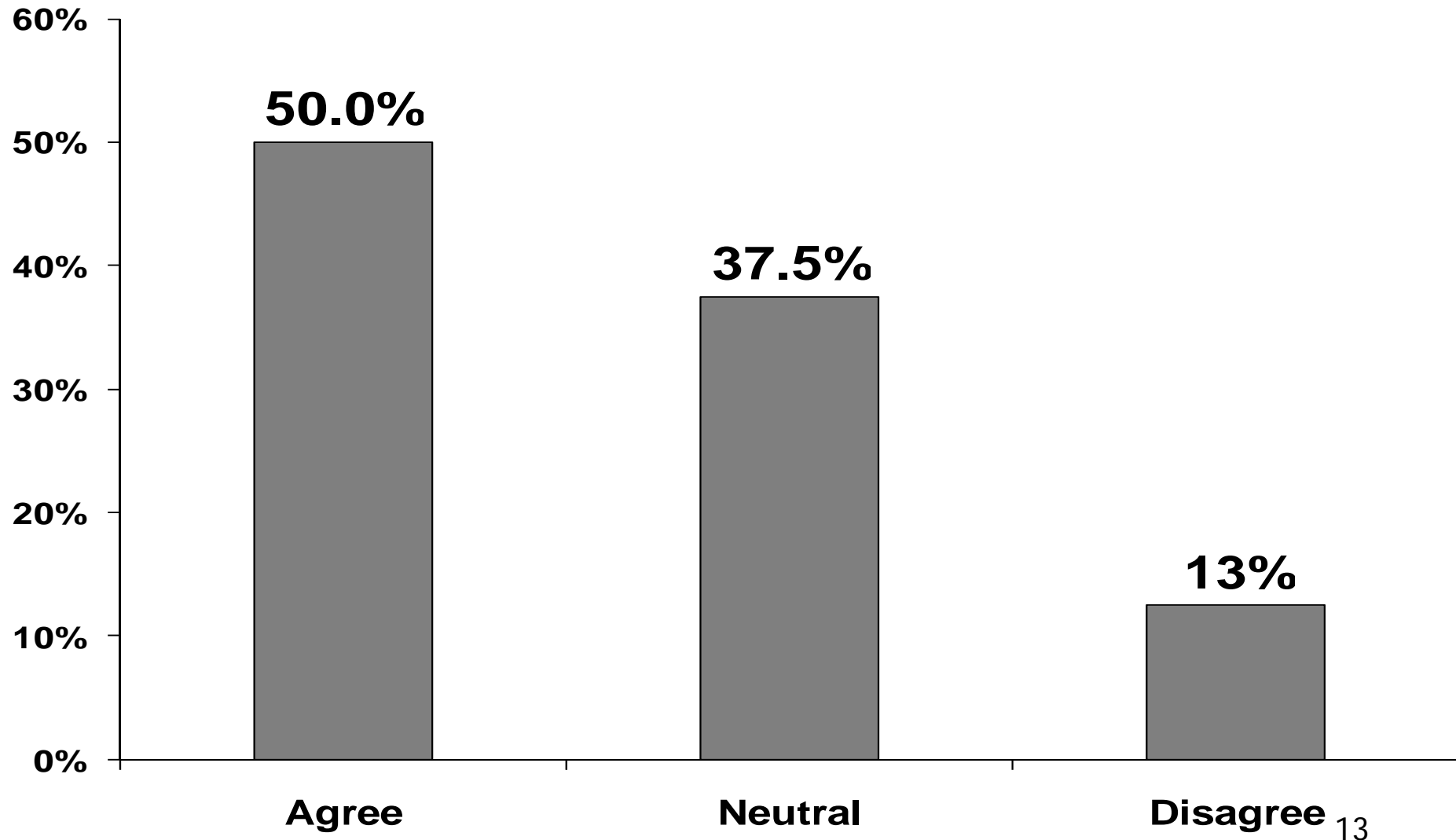
Dermatologists

Tele dermatology makes it easier to triage patients to clinic appointments compared to traditional referrals



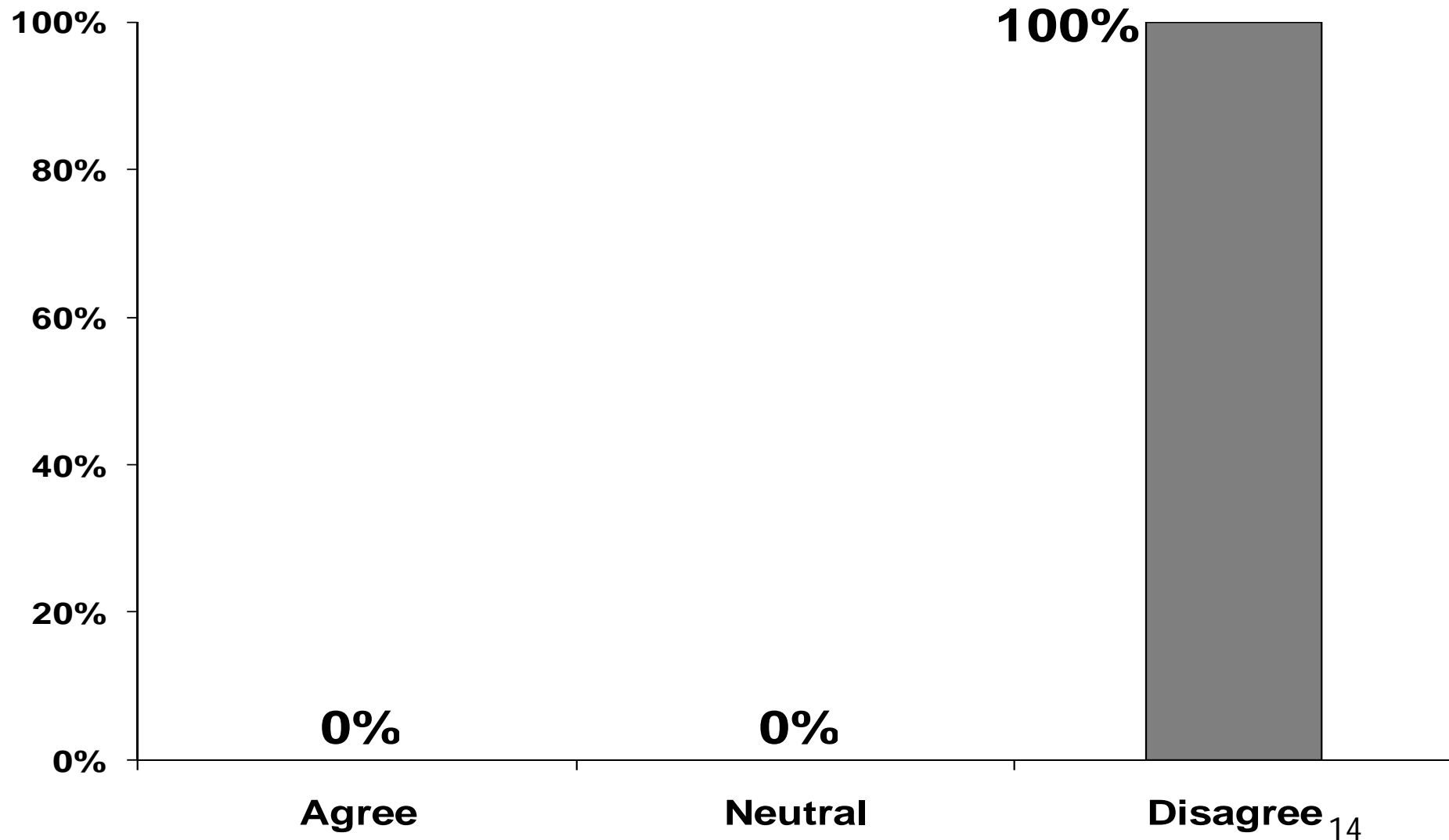
Dermatologists

Tele dermatology is a more efficient use of the time I spend as a consultant



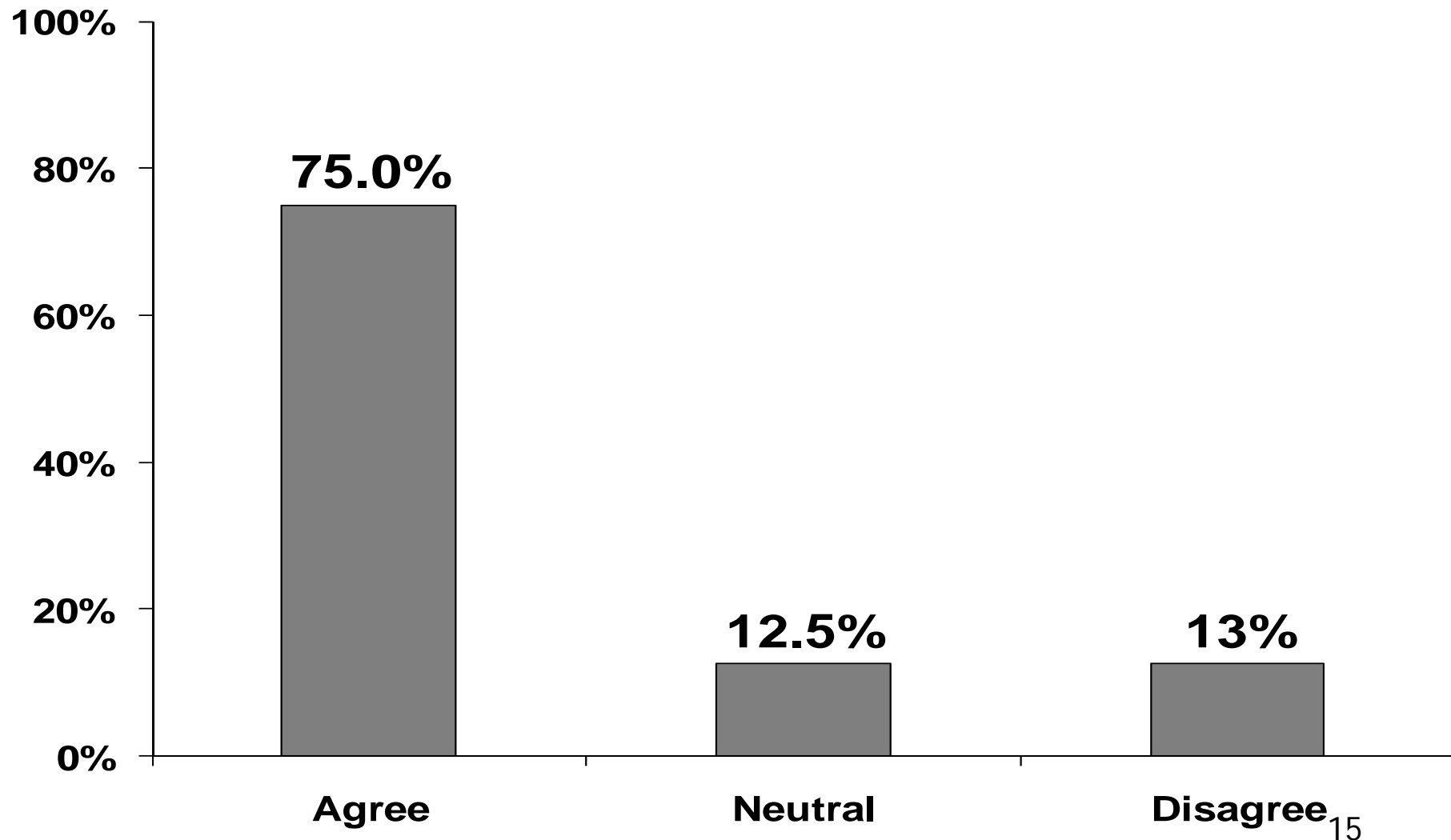
Dermatologists

Tele dermatology consults take longer to perform than do clinic visits



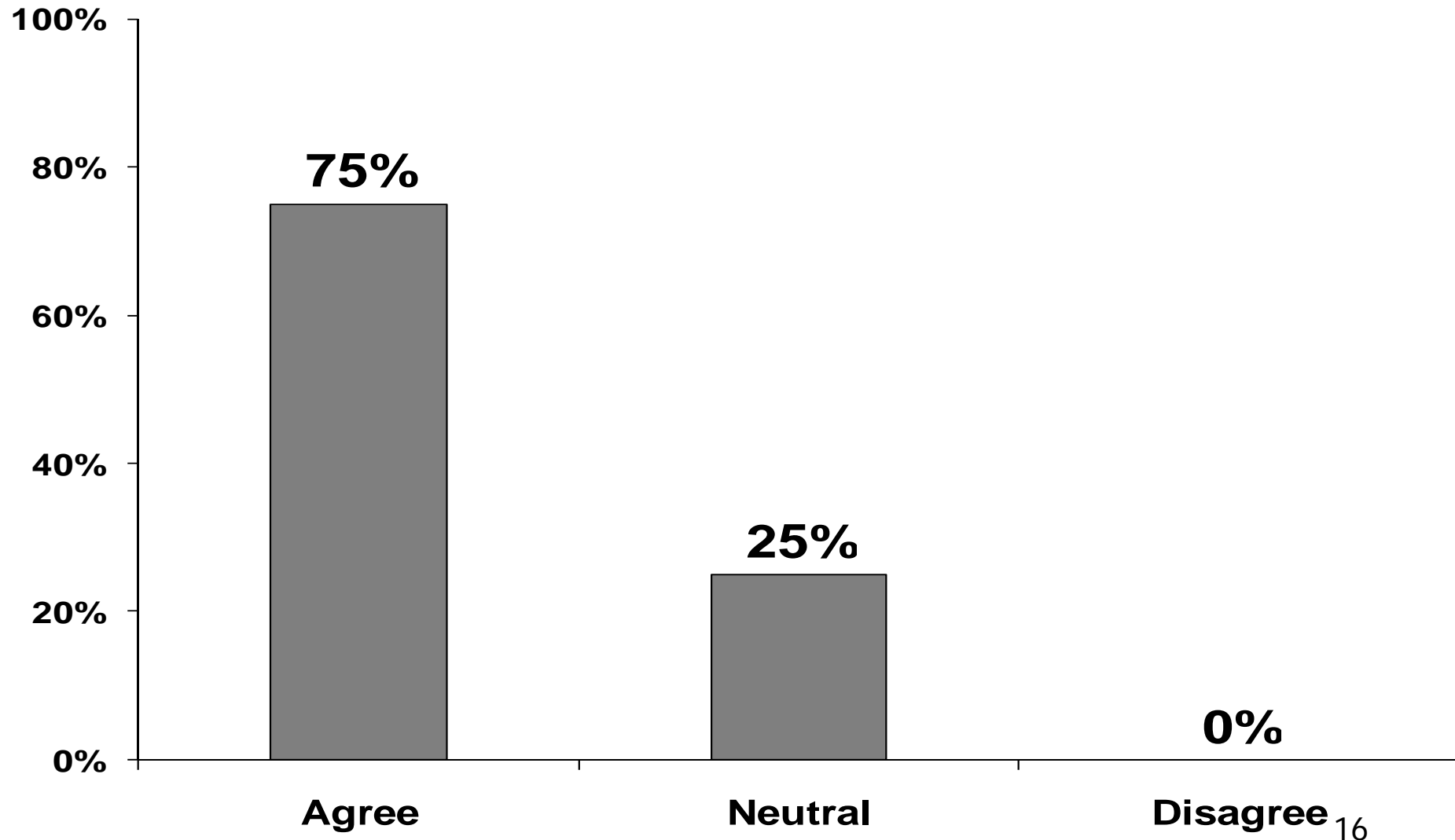
Dermatologists

I am less confident in my diagnoses and management plans using teledermatology than seeing patients in clinic



Dermatologists

Overall, I am satisfied with using teledermatology as a consult method



Results

Patients

- 101 of 135 teledermatology patients (75%) completed a survey
- 93 of 140 usual care patients (66%) completed a survey

Usual Care – Patients

In terms of your satisfaction, how would you rate the following...

	Excellent	Very Good	Good	Fair	Poor
...how long you waited for an appt.	<u>27%</u>	<u>22.5%</u>	23.5%	<u>12%</u>	<u>15%</u>
...the convenience of the clinic	<u>40%</u>	<u>31%</u>	20%	7%	2%
...the visit overall	<u>45%</u>	<u>33%</u>	14%	8%	0%

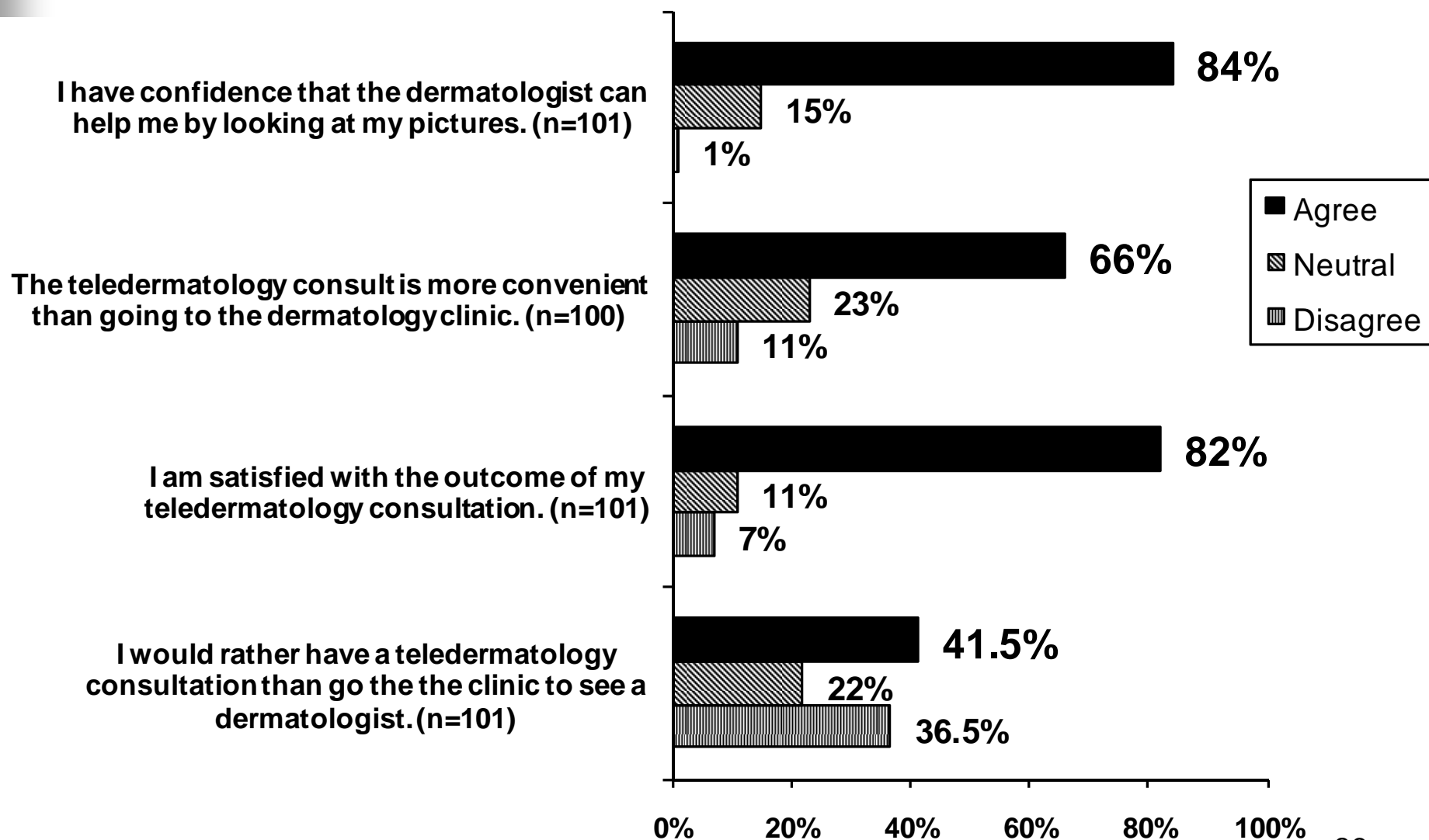
Teledermatology - Patients

In terms of your satisfaction, how would you rate the following...

	Excellent	Very Good	Good	Fair	Poor
...how long you waited to hear results	<u>41%</u>	<u>24%</u>	15%	<u>12%</u>	<u>8%</u>
...tderm's convenience	<u>57%</u>	<u>15%</u>	24%	2%	2%
...tderm overall	<u>52%</u>	<u>27%</u>	16%	3%	2%

Patients

Teledermatology





Summary

- All users expressed overall satisfaction with teledermatology
- Referring clinicians
 - Timeliness of the referral process, educational benefit, and preferred teledermatology



Summary

- Dermatologists
 - Improved triage decisions, unsure of efficiency, less confident, but overall were satisfied
- Patients
 - Pleased with both consult modalities, no clear preference, confidence with teledermatology

VISN 11 Wound Care Teleconsultation Program

VIREC Clinical Informatics Cyberseminar
March 18, 2010

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HSR&D CoE

Implementation Research Coordinator
Diabetes Mellitus QUERI

VA Ann Arbor Healthcare System



Poll Questions

- Which of the following apply to you? (Check one or more.)
 - I am interested in teleconsultation for wound care.
 - I am interested in teleconsultation for dermatology.
 - I am interested in teleconsultation in general.
 - I am a clinician.
 - I am a researcher.



Objectives

- Determine feasibility of store-forward telemedicine system for providing consultations on chronic wounds.
- Evaluate the VISN 11 wound care teleconsultation program by examining: (1) utilization of services; (2) use of state-of-the-art treatment modalities; (3) amputation rates; and (4) quality of care as measured by various process indicators.
- Significance: Patients with chronic wounds have problems accessing specialized wound care centers.



Background

“Pressure Ulcer Assessment via Telemedicine” (HSR&D funded study)

- Evaluation of accuracy of Web-based, store-forward telemedicine system for monitoring status of patients with chronic wounds



Feasibility Study

“Evaluation of VISN 11 Wound Care
Teleconsultation Program”

(Funded by VISN 11 and QUERI RRP)



Methods

- October 2007 – September 2008
- Ann Arbor VAMC wound care team: wound care NP, plastic surgeon, ID specialist
- Referring centers: Battle Creek and Grand Rapids
 - Wound care nurse requested consultations via CPRS
 - Digital images uploaded to VISTA Imaging
 - Additional clinical data entered into CPRS wound care template



Methods

Ann Arbor wound care NP:

- Screened all consultations
- Discussed complicated cases with plastic surgeon or ID physician
- Forwarded diagnostic and treatment recommendations back to nurse via CPRS



Methods

- Quasi-experimental design.
- Intervention group: patients enrolled in FY 2008 of the VISN 11 teleconsultation program.
- Historical control group: chronic wound patients seen at the Battle Creek VAMC and Grand Rapids OPC in 2005.
- Data sources
 - Austin databases for demographics, comorbidities, resource utilization, and amputation rates.
 - CPRS for data on wound type, treatments, and processes of care.



Results

- 92 patients were enrolled in teleconsultation program between October 1, 2007, and September 30, 2008.
- Data were collected from the initial visit as well as follow-up visits for a year following their first visit, for a total of 368 visits.
- During those visits, 227 tele-consultations were provided.
- Historical control consisted of 105 patients and 114 visits.



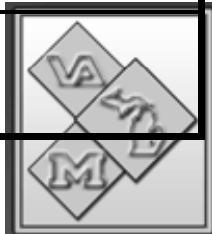
Results

	Study Patients	Historical Controls	P-value
# of Patients	92	105	
# Male	92 (100 %)	102 (97.1%)	0.25
Age	64.0 (11.2)	63.4 (12.7)	0.35
Mean # of wounds/pt at index visit	1.54 (0.87)	1.11 (0.32)	<0.0001



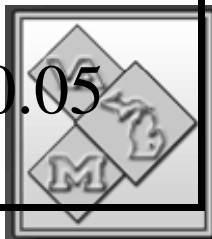
Results

Types of Wounds at Index Visit	Study Patients N = 142	Historical Controls N = 117
Diabetic foot ulcers	46 (32.4%)	25 (31.2%)
Venous stasis ulcers	48 (33.8%)	16 (20.0%)
Arterial ulcers	18 (12.7%)	14 (17.5%)
Pressure ulcers	12 (8.5%)	11 (13.8%)
Misc (trauma, burn, surg)	18 (12.7%)	14 (17.5%)
TOTAL	142 (100.0%)	80 (100.0%)
Unknown	0	37



Results

	Study Patients (N = 92)	Historical Controls (N = 105)	P-value
# of Amputations	6 (6.5%)	4 (3.8%)	0.52
# of Visits to AAVAMC Wound Clinic	7 (7.6%)	21 (20.0%)	0.01
Avg # Inpt Admits for Wound Care	0.36 (0.66)	0.15 (0.50)	0.007
Avg # Inpt Bed Days for Wound Care	5.02 (12.24)	2.26 (10.79)	0.05



Results

Process Measures	Study Patients N = 515 wound visits	Historical Controls N = 127 wound visits	P-value
Dimensions of wound noted	491 (95.3%)	76 (59.8%)	0.0001
Wound bed described	493 (95.7%)	57 (44.9%)	0.0001
Debridement when necrosis noted	142/167 (85.0%)	15/28 (53.6%)	0.0004
Culture and/or antibiotics when infection suspected	27/38 (71.1%)	32/34 (94.1%)	0.01



Results

Process Measures	Study Patients N = 515 wound visits	Historical Controls N = 127 wound visits	P-value
Antibiotics prescribed when no infection noted	87/123 (70.7%)	29/61 (47.5%)	0.003
Offloading plan noted for foot ulcers	247/287 (86.1%)	6/51 (11.8%)	0.0001
Dressing plan noted	488 (94.8%)	81 (63.8%)	0.0001
HbA1c ordered when needed	348/417 (83.5%)	58/83 (69.9%)	0.0055



Results: Consultation Recommendations

Recommendation	# (%)
Dressings	64 (18.4%)
Labs	51 (14.7%)
X-rays	40 (11.5%)
Offloading	36 (10.3%)
Debridement	33 (9.5%)
Stop antibiotics	30 (8.6%)
Compression	24 (6.9%)



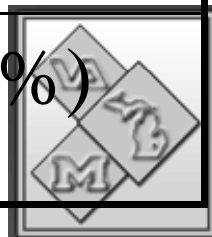
Results: Consultation Recommendations

Recommendation	# (%)
Refer to Ann Arbor	23 (6.6%)
Remove pressure	16 (4.6%)
Order culture	10 (3.5%)
Start or change antibiotics	8 (2.3%)
Refer to PCP	5 (1.4%)
Cancel Ann Arbor visit	4 (1.1%)
Order shoes	4 (1.1%)
TOTAL	348 (100.0%)



Results: Patient Satisfaction

1st Visit (N = 88)	
Statement	# (%)
Did not mind having photographs taken of their wound	83 (94.3%)
Expressed some level of concern about the privacy of their medical information	23 (26.1%)
Felt it was more convenient to receive care at home site	82 (93.2%)
Felt they had received good care during their visit	85 (96.6%)
Would have been more confident if seen at Ann Arbor VAMC	8 (9.1%)



Conclusions

The teleconsultation system had a mixed effect on use of health services:

- Frequency of traveling to the referral center significantly reduced.
- Inpatient admissions and days of care not reduced (actually greater for the teleconsultation group).
- No significant difference in amputation rates between the two groups.
- Significant difference for most process measures of quality.



Challenges and Limitations

- Support necessary from local DSS coordinators, clinical applications coordinators, coding specialists, and Vista Imaging experts
- Staff time required for providing consultation
- Difficulty in scheduling live consultations



Challenges and Limitations

- Procedures to adequately capture response to consultation suggestions need development
- Has not been piloted with nurses untrained in wound care
- Limitations in study design



National Survey of Wound Care

Level of Wound Care (N = 56 facilities)	# (%)
Interdisciplinary	6 (10.7%)
MD	2 (3.6%)
Certified nurse	28 (50.0%)
Nurse	6 (10.0%)
No wound clinic	14 (25.0%)
TOTAL	56 (100.0%)



National Survey of Wound Care

Appropriateness of Referrals (N = 64 facilities)	# (%)
Too soon	14 (25.5%)
Too late	5 (9.1%)
Both too soon and too late	12 (21.8%)
Appropriate	24 (43.6%)
TOTAL	55 (100.0%)
Missing	9



National Survey of Wound Care

Barriers to Wound Care

- Transportation to expert care
- Scheduling the consultation or transfer
- Understanding by PCP that expert wound care is needed
- Knowledge by PCP of wound care resources



Challenge to VA

To improve access to high quality health care
(with corresponding improvement in outcomes)
within financial constraints.

Can teleconsultation provide the solution?

Who will take the lead in implementing these
solutions?



New Wound Template, page 1

Template: TELEMEDICINE LE WOUND NEW

Telemedicine Consult/LE wound
Originating site:

History or Current Wounds/Treatment/Compliance: *

Form & Compliance Off loading: *

Recent Blood Sugar Control: *

Active problems - Computerized Problem List is the source for the following:

1. Diabetes Mellitus without mention of Complication, type II or unspecified ty
2. Primary Open Angle Glaucoma
3. Homeless Person
4. SOCIAL MALADJUSTMENT
5. Lack of Housing (ICD-9-CM V60.0)
6. ALZHEIMER'S DISEASE
7. PPD skin test > 10mm after 3 days one test unit of ppd administered left anterior forearm
8. Active Immunization of Influenza Virus Vaccine 0.5ml influenza lot #110a exp5-2001, given in rt deltoid
9. Pneumovax 11/14/99 Pneumovax given PROBLEM CURRENT AS OF TODAY
10. tetanus/diphtheria administered 4/15/99 CURRENT
11. PPD ppd read lf. forearm 0 mm induration

PSH: *

SH: *

Allergies: RADIOLOGICAL/CONTRAST MEDIA, CHEESE
Active Inpatient and Outpatient Medications (including Supplies):

No Medications Found

Exam: *

Wound #1

All None *Indicates a Required Field Preview OK Cancel



New Wound Template, page 2

Template: TELEMEDICINE LE WOUND NEW

Wound #1
Location: *

There is is not sensation in the area of the wound
Peripheral Pulses: *

Wound measurements
Length: *
Width: *
Depth: *

Edges: *

Undermining: *none

There is is not exposed bone.
There is is not exposed tendon.

Necrotic tissue: *

Granulation Tissue: *

Epithelialization: *

Exudate: *

Surrounding Skin: *normal

Peripheral Tissue Edema: *none

Peripheral Tissue Induration: *

Debridement was performed:

Other Wounds:

Labs/Micro/Path:
CBC: CBC reflex diff - NONE FOUND
basic: BASIC METABOLIC PANEL - NONE FOUND

Al None * Indicates a Required Field Preview OK Cancel



New Wound Template, page 3

Template: TELEMEDICINE LE WOUND NEW

Granulation tissue: *

Epithelialization: *

Exudate:

Surrounding Skin: *normal

Peripheral Tissue Edema: *none

Peripheral Tissue Induration: *

Debridement was performed:

Other Wounds:

Labs/Micro/Path:

CBC: CBC reflex diff - NONE FOUND
basic: BASIC METABOLIC PANEL - NONE FOUND
sed rate: WESTERNGREN ESR - NONE FOUND
prealb:
HgbA1C: No data for HEMOGLOBIN A1C
Discribe bone or tissue culture and pathology studies.

Studies: -X-RAY
-bone scan
-MRI,
-PV Studies
etc
enter "none" if nothing to report

A/P
Cover the items listed below when related to the visit:
-dressings
-offloading
-surgical plan if indicated
-labs
-imaging
-consults (SCI, social work, VNA, ECC, Nutrition, PT)
-counseling (s/s of infection, compliance, smoking cessation, etc.)
-diabetes education performed

F/U appt.s *

All None *Indicates a Required Field Preview OK Cancel



Follow-up Wound Template, page 1

Template: TELEMEDICINE LE WOUND FOLLOW-UP NOTE

Telemetric Follow up/LE Wound
Originating site:

History or Current Wound/Treatment/Compliance: *

Form & Compliance Off loading: *

Recent Blood Sugar Control: *

Allergies: RADIOLOGICAL/CONTRAST MEDIA, CHEESE
Active Inpatient and Outpatient Medications (including Supplies):
No Medications Found

Exam: *

Wound #1
Location: *

There is is not sensation in the area of the wound
Peripheral Pulses:

Wound measurements:
Length:
Width:
Depth:

Edges: *

Undermining: * none

There is is not exposed bone.
There is is not exposed tendon

All None * Indicates a Required Field Preview OK Cancel



Follow-up Wound Template, page 2

Template: TELEMEDICINE LE WOUND FOLLOW-UP NOTE

Necrotic Tissue: *
Granulation Tissue: *
Epithelialization: *
Exudate:
Surrounding Skin: *normal
Peripheral Tissue Edema: *none
Peripheral Tissue Induration: *

Debridement was performed:

Other Wounds:

Labs/Micro/Path:
CBC: CBC reflex diff - NONE FOUND
basic: BASIC METABOLIC PANEL - NONE FOUND
sed rate: WESTERGREIN ESR - NONE FOUND
prealb:
HgbA1C: No data for HEMOGLOBIN A1C
Describe bone or tissue culture and pathology studies.

Studies: -plain films, MRI, bone scan etc.
enter "none" if nothing to report
-PV Studies

A/P
Cover the items listed below when related to the visit:
-dressings
-offloading
-surgical plan if indicated
-labs
-imaging
-consults (SCI, social work, VNA, ECC, Nutrition, PT)
-counseling (s/s of infection, compliance, smoking cessation, etc.)
-diabetes education performed

F/U appt.s *

All None *Indicates a Required Field Preview OK Cancel

