

Thunder Project II Summary of Initial Findings

Thunder Project II was a large-sample, multisite research project sponsored by AACN in partnership with Oncology Nursing Society, Emergency Nurses Association, and the National Association of Orthopedic Nurses, the American Society of Pain Management Nurses, and the American Radiological Nurses Association, Canadian Association of Critical Care Nurses, and the Society of Pediatric Nurses

The purpose of the research was to examine pain perceptions and responses of acutely or critically ill pediatric and adult patients to selected procedures. Specifically, the study was designed to

- Describe patients' pain perceptions and responses for each selected procedure across different phases of the procedure.
- Compare patients' pain perceptions and responses across procedures.
- Examine relationships between patients' pain perceptions and responses to selected procedures and the following factors: patient's age, gender, ethnicity, presence of chronic pain, chronic opioid use, pre-procedure analgesic and sedative use, use of non-pharmacological interventions, type of health care provider performing the procedure, and procedure duration.
- Describe distress associated with selected procedures.

Description of Participating Sites

A total of 169 sites contributed data to Thunder Project II. Demographic information is currently available on 153 of these sites, representing a 90.5% return rate.

Type of Facility

Type of Facility	Frequency	Percentage (%)
Community hospital (non-profit)	91	59.5
Community hospital (for profit)	8	5.3
University medical center	35	23.0
Military hospital	2	1.3
Federal hospital	9	5.9
County hospital	3	2.0
Other	5	3.3
Total	153	100

Facility Size

Number of Beds	Frequency	Percentage (%)
<50	1	.7
50-99	4	2.6
100-199	19	12.5
200-299	25	16.4
300-399	38	25.0
400-499	24	15.7
>500	41	27.0
Total	152	100

Geographic Distribution of Participating Facilities

Geographical Region	Frequency	Percentage (%)
CT, ME, MA, NH, RI, VT	8	5.3
NY	2	1.3
DE, NJ, PA	17	11.2
DC, MD VA, WV	9	5.9
NC, SC	5	3.3
AL, GA	3	2.0
FL	9	5.9
MI, WI	14	9.2
IN, OH	4	2.6
IL	10	6.6
KY, TN	7	4.6
AR, LA, MS	2	1.3
IA, MN, NE	13	8.6
KS, MO	4	2.6
OK, TX	10	6.6
MT, ND, SD, WY	3	2.0
AZ, CO, NV, NM, UT	4	2.6
AK, ID, HI, OR, WA	7	4.6
CA	16	10.5
International	5 (3 sites in Canada, 1 site in Australia, 1 site in the United Kingdom)	3.3
Total	152	100

Types of Units that Participated

Type of Unit	Number of Units that Participated (percentage not reported since multiple units per site could participate)
Combined ICU/CCU	47
Coronary Care Unit	44
Medical ICU	35
Pediatric ICU	13
Neonatal ICU	1
Surgical ICU	41
Cardiac Surgery ICU	29
Neuro/Neurosurgery ICU	11
Trauma Unit	16
Burn ICU	5
Emergency Department	2
Progressive Care Unit/Telemetry/Stepdown Unit	54
Cardiac Catheterization Lab	32
Medical-Surgical Floor	26
Oncology Unit	11
Other	32
Total	399

Number of Nurses Participating

Role	Number of Nurses*	
Site Coordinator	153	
Site Research Associate	144	Mean 6.06 Median 5 Mode 1 (SD=4.78)
Total	295	*152 sites reporting

Study Participants

Data were collected on 6309 patients, and data from 6201 patients were included in the analysis. Three age groups were studied: adults (age 18 and over), adolescents (ages 13-17), and children (ages 3-12). Most of the study participants were adults (96.1%). Adolescents comprised 2.4% of the sample, followed by children (1.5%).

The following table provides a breakdown of patient distribution by age and procedure.

Procedure	Ages 3-12	Ages 13-17	Ages 18 and older	Total Number of Patients
Wound Care	2	7	412	421
Wound Drain Removal	1	18	548	567
Tracheal Suctioning	20	17	756	793
Turning	61	85	1395	1541
Femoral Sheath Removal	7	22	2629	2658
Central Line Placement	0	2	219	221
Total	91	151	5959	6201

Measures of Procedural Pain

In this study, the pain was measured using a variety of tools and instruments.

Overview of Measures of Pain Responses

Pain response	Instrument	Age Group
Intensity	0 - 10 intensity NRS*	13 years and >
	Oucher	3 - 12 years
Location	Adult BOD**	18 years and >
	Adolescent BOD	8 - 17 years
	Child BOD	3 - 7 years
Pain Qualities	Modified MPQ-SF***	8 years and >
	patient states 3 words	3 - 7 years
Pain Behaviors	behavior checklist	3 and >

Heart rate****	heart rate monitor	3 and >
Blood Pressure****	blood pressure monitor	3 and >
Procedure distress	0 - 10 distress NRS	13 and >

*NRS=numeric rating scale

**BOD=Body Outline Diagram

*** MPQ-SF= McGill Pain Questionnaire-Short Form

**** In monitored patients

Breakdown of Mean Pain Intensity Reported During Procedure by Procedure and Age Group

Procedure	Children (3-7) Oucher Faces (0-5 scale)	Children (8-12) Oucher Numeric Scale (0-100)	Adolescents (13-17) (0-10 NRS)	Adults (18 and older) (0-10 NRS)
Wound Care	No data	Mean intensity=10 SD=0	Mean intensity=7.0 SD=2.37	Mean intensity=4.42 SD=3.20
Wound Drain Removal	No data	No data	Mean intensity=6.33 SD=3.21	Mean intensity=4.67 SD=3.24
Tracheal Suctioning	Mean intensity=2.33 SD=2.34	Mean intensity=52.0 SD=28.98	Mean intensity=5.0 SD=3.16	Mean intensity=3.94 SD=3.32
Turning	Mean intensity=2.71 SD=2.42	Mean intensity=28.08 SD=28.4	Mean intensity=6.47 SD=2.83	Mean intensity=4.93 SD=3.09
Femoral Sheath removal	No data	No data	No data	Mean intensity=2.65 SD=2.95
Central Line Placement	No data	No data	No data	Mean intensity=2.72 SD=2.95

Next Steps

The Thunder Project II Task Force is currently working on three primary reports of the findings: overview of the study, patterns and use of pharmacological interventions to manage procedural pain, and behavioral responses to procedural pain. The timeline for submitting these papers for publication is the Spring and Summer 2000. Topics for ten additional papers that would report specific aspects of the study (each procedure, pediatric participants, etc.) have been identified. Study findings will be presented at the 2000 NTI.