Case Study | Advancing Neurosurgery & Spine Care Through Telemedicine

STeM SPECIALIST TELEMED

Background

A mid-sized regional hospital serving a population of over 250,000 lacked consistent access to neurosurgery and spine specialists. With approximately 15,000 annual ED visits, the hospital frequently transferred patients with neurological or spinal conditions due to the absence of on-site expertise. These transfers not only delayed care but also impacted patient satisfaction, hospital revenue, and community reputation.

The Challenge

The hospital faced three key challenges:

- **Specialist Shortage:** No regular neurosurgery or spine coverage, leading to frequent patient transfers.
- **High Costs:** Reliance on rotating locum tenens providers proved financially unsustainable and failed to meet the permanent need.
- **Workflow Disruption:** ED and inpatient teams struggled with disposition planning and diagnostic confidence in complex cases.

The STeM Solution: TeleNeurosurgery & Spine Services

The hospital partnered with Specialist TeleMed (STeM) to implement a Neurosurgery & Spine Telemedicine Program. This included:

- **24/7 access** to board-certified neurosurgery and spine specialists via secure telemedicine platforms.
- **Rapid consultations** for ED and inpatient cases, enabling timely diagnosis and treatment planning.
- **Collaborative care** with local physicians to retain patients and initiate appropriate management locally.

Results

Within the first three months, the hospital saw measurable improvements:

- **Patient Retention:** Avoided transfers for 6 patients, recapturing significant DRG revenue.
- **Cost Recovery:** Program costs were offset by retained patient revenue, achieving cost-neutrality.
- **Improved Care Quality:** Enhanced diagnostic accuracy and management confidence among ED and inpatient teams.
- **Community Impact:** Strengthened hospital reputation and increased general patient volume by 9%, even among non-specialist cases.

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Why STeM

STeM delivers more than just consultations:

- **Specialist Access:** Coverage for medical and surgical conditions that previously required transfers.
- **Workflow Efficiency:** Faster dispositions and reduced bounce-backs.
- **Scalable Model:** Designed to be cost-neutral, with ROI realized in months.
- **Clinical Confidence:** Support for atypical, complex, or high-risk cases.

Conclusion

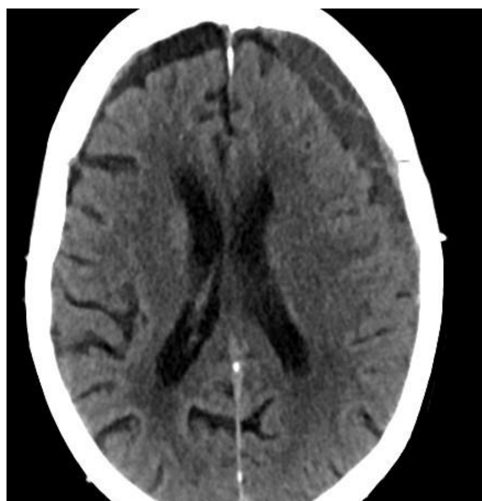
By partnering with STeM, the hospital transformed its neurosurgery and spine care capabilities without the burden of on-site staffing. Telemedicine enabled better patient outcomes, stronger financial performance, and a more resilient care model. For hospitals seeking to elevate specialist access and retain patients locally, STeM offers a proven, sustainable solution.

Clinical Case Studies

The clinical cases below further illustrate the effectiveness of Neurosurgery & Spine consultations performed via telemedicine.

Hx = History
PmHx = Past Medical History
PE = Physical Examination

#1



Hx: 73 y/o male without trauma but new onset intermittent headaches presents to emergency department.

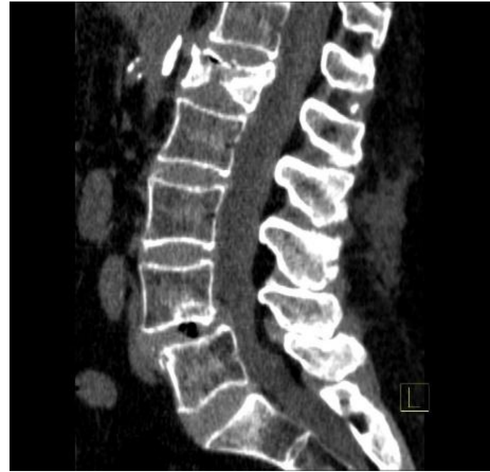
PmHx: HTN, CAD.

PE: Neurologically normal.

Imaging: CT shows bilateral chronic subdural hematoma.

Consultation Result: The patient was observed for 6 hours, repeat CT (stable), discharged with regional neurosurgical follow-up in 3-5 days. Cautions were to avoid antiplatelet medications and institute fall precautions. No transfer was necessary.

#2



Hx: 68 y/o with new onset of back pain after a ground level fall. Numbness on lateral aspect of right lower extremity.

PmHx: Osteoporosis, HTN, uterine CA.

PE: Decreased sensation in lateral aspect of right lower extremity in an LS dermatome. Otherwise, neurologically normal.

Imaging: CT shows L1 compression fracture.

Consultation Result: L1 compression fracture and spondylolisthesis at L4/5. L1 compression fracture was stable in this case; activity limitations and specific bracing were recommended. Follow-up in 2 weeks with local PCP or regional spinal surgeon. L4/5 slip was likely cause of right lateral leg numbness; address with spinal surgeon at follow-up visit; Red flags reviewed.

#3

Hx: 54 y/o, slip & fall from ladder. <30 sec LOC, transported to emergency department by EMS.

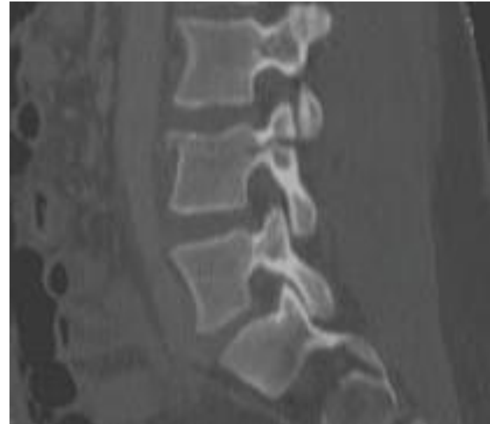
PE: GCS 15. Neurologically normal except for slight post-concussive symptoms which cleared.

Imaging: CT scan demonstrates small (5mm) cerebral contusion in left frontal hemisphere and scalp contusion.

Consultation Result: After the consultation, the patient was admitted overnight by PCP, with repeat imaging which was stable. Discharged in morning with follow-up and discharge instructions.

Traumatic contusions in a neurologically intact patient can be admitted overnight in many cases with neuro-assessments and repeat imaging as recommended. Follow-up inpatient telemedicine consultations are available.

#4



Hx: 36 y/o male, slip & fall from 'moon bounce' 5 feet onto the ground. Presented with back pain and two rib fractures.

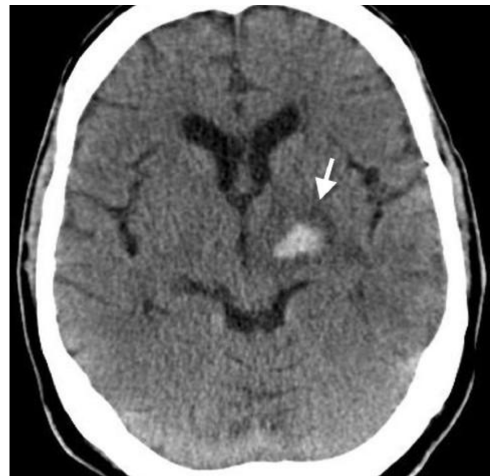
PmHx: None.

PE: Neurologically normal. Back pain with palpation.

Imaging: CT shows L4 facet fracture with compression deformity.

Consultation Result: CT demonstrated a facet fracture and chance fracture. This is a highly unstable spinal fracture, and the patient was transferred to a regional medical center for surgical stabilization.

#5



Hx: 77 y/o female with right-sided weakness x72 hours.

PmHx: DM, hyperlipidemia.

PE: AOx3; RUE/RLE 2/5 with normal sensation; otherwise intact.

Imaging: CT shows 1.2 cm left basal ganglia hemorrhage.

Consultation Result: Small hemorrhagic stroke in a non-anticoagulated patient. PCP felt comfortable admitting the patient locally with follow-up CT in 6 and 24 hours - stable. Follow-up neurosurgical telemed consult in AM. Patient dispositioned to SNF with outpatient neurology follow-up for stroke prevention and reassessment.

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#6

Hx: 28 y/o with persistent post-concussive symptoms after helmeted motorcycle accident. Re-evaluation after 2 hours demonstrated difficulty with recall and new neck pain.

PmHx: Depression.

PE: AOx3 but with inconsistent recall of objects; mild post-traumatic amnesia surrounding accident. Otherwise normal.

Imaging: CT head and neck normal.

Consultation Result: Post-concussive, mild. Recommended observation in ED for 6 hours; symptoms cleared. CTA of the neck was recommended, which revealed non-occlusive vertebral artery dissection; recommended medical management with antiplatelets, use of neck collar, and follow-up with regional neurosurgeon in 5-7 days.

> **Contact Specialist TeleMed to learn more about how a Neurosurgery & Spine Telemedicine Program can help retain patients, recover costs, and improve care quality.**

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