



From Planning to Practice: Nursing Perspectives in Establishing a Gamma Knife Department

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Context and Aims

- January 2026: Icon commenced first Gamma Knife service
- Planning for service started long before 2026
- The aim of this work was to support service readiness by:
 - Strengthening patient assessment and preparation processes
 - Integrating nursing workflows into existing neurosurgical, radiation oncology, and physics pathways
 - Reducing procedural and system-based risk during treatment delivery



Background & Rationale

- Not just technology implementation → Transition to a new clinical care model
- Key requirements:
 - Precision-driven workflows
 - Interdisciplinary coordination
 - High-acuity clinical capability
- Nursing focus:
 - Workforce readiness and competency
 - Safe patient preparation and support





Building Foundational Knowledge: New York (2024)

Experience

- ISRS Congress attendance
- Site visit – Weill Cornell Medicine

Key Exposure

- International stereotactic practice standards
- Established Gamma Knife workflows
- Complication management approaches
- Real-world cases informing risk and planning

Impact

- Strengthened understanding of stereotactic treatments
 - Insight into complex case decision-making
 - Exposure to global best practice
 - Informed local service implementation
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Observational Learning in Established Gamma Knife Services

- Site visits Princess Alexandra Hospital, Brisbane
- Focused on:
 - The role of the nurse in stereotactic radiosurgery
 - The critical tasks nurses complete each day
 - How patient preparation influences treatment safety
 - How different teams collaborate around treatment day
- Key nursing responsibilities observed and noted:
 - Comprehensive medication reviews
 - Gathering detailed patient histories, including the presence of shunts, implants, or prior cranial surgeries
 - Identifying contraindications early to prevent last-minute delays or safety risks

Working with the MDT: Building Integrated Workflows

Collaborative Approach

- Partnered with Radiation Therapists, administration, and lead Radiation Oncologists
- Supported technical implementation and patient pathway design

Patient-Centred Focus

- Evaluated readiness: clinical, physical, and psychological
- Ensured safe, appropriate preparation for treatment

Workflow Development

- Co-designed end-to-end workflows from referral to treatment
- Established clear handover points across teams
- Defined processes for coordination, scheduling, and communication

Impact

- Strengthened coordination across disciplines
- Reduced risk of delays and errors
- Enabled a safe and efficient service from day one



Development of Policy & Procedure



Formalising Practice

- Standardised workflows into policy and procedures
- Ensured safe, consistent care



Work Instructions

- Developed for frame & mask treatments
- Included key steps, safety checks, escalation pathways



Roles & Responsibilities

- Defined across all disciplines
- Clear accountability and handover points



Impact

- Reduced variability and risk
- Improved coordination and staff confidence
- Supported ongoing training and sustainability

Policy, Procedure, Medical Record Forms

Updated existing policies and procedures to align with Gamma Knife workflows:

- Medication Management
 - Added bupivacaine to imprest list for frame placement
- Medication Chart
 - Developed Gamma Knife-specific chart to streamline prescribing and ensure medications are ordered in advance
- Procedure Documentation Updated outpatient procedure form to include frame placement and support clear documentation

 OUTPATIENT PROCEDURES MR75A		SURNAME: _____ GIVEN NAME: _____ UR NUMBER: _____ DOB: ____/____/____ SEX ☐ M ☐ F
PLEASE USE ONLY BLACK BALL POINT PEN TO COMPLETE FORM. ONLY Yellow Highlighter MAY BE USED.		
Time Out Immediately prior to procedure, staff perform Final Check as per Timeout Flow Chart: ☐ Correct patient ☐ Correct procedure ☐ Clinical Allergy / Alert History ☐ Anticipate critical events Name: _____ Position: _____ Start Time: _____ Finish Time: _____		
Procedure Specimen (where applicable) ☐ QML ☐ SNP ☐ Clinical Labs ☐ Clinpath ☐ N/A Other: _____ ☐ Specimen checked and matched to patient ID and labelled appropriately Procedure Location on Body: ☐ Prostate ☐ Head Other (Specify): _____		
Medications used ☐ As charted on MR59A Medication chart or MR59C Gamma Knife Medication chart ☐ Xylocaine 2% ☐ Bupivacaine 100mg/20mL (0.5%) with Adrenaline (epinephrine) 100mcg/20mL (1:200,000): _____ mL administered at _____ hours. ☐ Other (include dose): _____		
VMO Procedure Notes _____ VMO Signature: _____		
Post Procedure & Discharge Observations ☐ Observations recorded post procedure on MR55 as per relevant policy before mobilising patient Nutrition ☐ Light diet tolerated as per relevant procedure ☐ Able to mobilise safely Pain & Mobility ☐ Pain assessed ☐ Patient able to pass urine Bleeding from site ☐ None ☐ Minimal ☐ Moderate ☐ Severe ☐ Dressing applied ☐ Ice pack applied ☐ Provide discharge education to the patient and their carer Patient education & discharge planning ☐ Patient Information Sheet ☐ Provide next appointment (minimum of 7 days post fiducial insertion procedure, if applicable) ☐ Patient discharged with carer Comments: _____		
Discharging Nurse: _____ Signature: _____ Discharge Time: _____		

Workflow & System Development Using Aria



Embedded in Aria

- Structured workflows
- Standardised processes



Tools

- Dedicated GK Nurse Assessment Encounter
- Questionnaires
- Checklists
- Templates
- Prompts



Impact

- Improved accuracy
- Stronger safety
- Better MDT coordination

Title: Pre-Gamma Knife checklist

Type: Clinical Date: 7/05/2026 Time: 3:03 PM

Pre-Gamma Knife checklist

Driving restrictions in place?

☐ Yes ☐ No ☐ N/A

Details

Transport to/from Icon for treatment arranged

☐ Yes ☐ No ☐ N/A

Details

Medication cessation required:

☐ Yes ☐ No ☐ N/A

If Yes – action as per MEDC 001-02.AU

As per RO cease on:

/ /

Any claustrophobia/anxiety

☐ Yes ☐ No

If yes – consult with RO ensure medication ordered as below

Medication orders obtained and charted on MR59C?

☐ Yes ☐ No ☐ N/A

Reminders for Frame patients:

☐ Light breakfast only

☐ Wash hair night before day of treatment

Approve OK Cancel

Emergency Preparedness: Mock Medical Emergency with Frame In Situ

⚠️ Challenge

- Fixed frame limits airway access & positioning

🔍 Risk Focus

- Airway access → Head/neck restriction → Equipment compatibility

⚙️ Response

- Targeted airway protocols → Defined roles & escalation

🎯 Simulation Mock medical emergency with frame

- Tested access → coordination → equipment

✅ Impact

- Refined processes → Improved readiness & team confidence



Patient Resources

Collaborative Approach

ROs • RTs • Marketing • Consumer advisors

Outcome

- Improved patient understanding
- Consistent information delivery
- Enhanced readiness for treatment

Resources Developed

- Preparing for Gamma Knife treatment
 - What to expect
 - Frame fitting process
 - Managing discomfort & anxiety
- After your Gamma Knife Treatment
 - Generated within Aria – nursing staff can individualise specific discharge information

Gamma Knife

Preparing for Gamma
Knife treatment

Nursing Education and Capability Development



Education Framework

- Gamma Knife fundamentals
- Step-by-step workflows Aria system training



Competency & Safety

- Competency assessment tool
- Assessor guide
- Emergency management



Clinical Knowledge

- Conditions treated
- Side effects & symptom management

A structured education framework enables safe and scalable Gamma Knife services

Outcomes and Impact



Service Delivery

- Safe, integrated Gamma Knife workflow



Team Integration

- Strong multidisciplinary coordination



Workforce

- Confident, well-prepared nursing staff



Patient Experience

- Improved understanding & readiness



Safety

- Tailored emergency protocols



Sustainability

- Scalable model for future services



**100 Gamma Knife
treatments to date!**

Conclusion

-  Gamma Knife implementation requires integrated, multidisciplinary systems
-  Coordination across teams is essential for safe, reliable delivery
-  Structured education supports workforce readiness and confidence
-  Patient preparation is critical to treatment safety and efficiency