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WHITE PAPER

# Supporting Every Step: Reimagining the Surgical Journey through Digital Innovation

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## INTRODUCTION

*Surgery is one of the most critical and resource-intensive parts of the healthcare system, but for patients, it's often confusing and fragmented. Between appointments, there's little visibility, minimal support, and a heavy reliance on patients to remember what to do and when.*

*This white paper explores how digital innovation can do more than replicate existing processes – it can help redesign them. By rethinking the surgical journey from the patient's perspective and supporting clinicians with smarter, more connected workflows, we can create care that is not only more efficient, but more human.*

## ABOUT THE AUTHOR



Dr Cory Williams, PhD – Digital Health, is the Research and Clinical Lead at Five Faces, with over 13 years of experience in surgical and perioperative services across Australia's public health system. He combines deep clinical expertise with a focus on digital innovation to improve the surgical journey for patients and staff.

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## THROUGH PATIENTS' EYES: SURGERY IS MORE THAN A CLINICAL EVENT

For patients, being told they need surgery often marks the beginning of an uncertain and fragmented journey. After a brief consultation which is sometimes only a few minutes long, they may be added to a waitlist and sent home with minimal follow-up. In the weeks or months that follow, patients are left to manage complex preparation advice on their own: when to stop medications, what lifestyle changes to make, how to optimise health and recovery. With no consistent communication, it's all too easy for key instructions to slip from memory. Too often, long waitlist periods pass with no updates from the hospital, leaving patients worried they've been missed.

Without regular check-ins or reminders, the preventable problems show up on surgery day. Patients arrive unprepared, having missed key directives such as fasting or pausing blood thinners, and not undertaking smoking cessation. They may feel unclear about their procedure, its purpose, or how to manage their recovery. This confusion increases the risk of cancellations, complications, or even readmissions. In essence, the perioperative process becomes a series of fragile handoffs, with the patient and their family, feeling like they are navigating the journey alone.



## THE HUMAN EXPERIENCE OF SURGERY

What's often overlooked is that surgery is not just a clinical event: it's a life event. The patient journey involves four interwoven experiences: the physical (symptoms, treatment, recovery), the logistical (transport, appointments, work and family disruption), the emotional (anxiety, fear, uncertainty), and the personal (impact on identity, confidence, relationships). A surgical pathway that supports only the medical component leaves patients vulnerable in every other domain. Without a clear, connected experience across all four, patients are expected to carry the burden of coordination, comprehension and coping – often without the tools or support to do so.

To support patients more effectively, we need ways of communicating that are consistent, timely, and tailored to the complexities of the journey. That means reaching patients not just at the point of care, but at every step – before, during and after surgery – with information and support that reflects the full reality of their experience.

*"They told me I need surgery..."*

But I feel confused.

How long will I need to wait?

I can't remember everything they said I need to do to prepare...

Will I be able to manage on my own afterwards?

How can I learn more and who do I contact if I have questions?



*"My Mum's surgery was cancelled"*

She didn't understand she needed to stop taking her medication.

We've both taken time off work.

We travelled hours to get to the hospital.

Now we have to do it all again.

And I have to arrange for my aunt to take care of my father again.



## THE PRESSURE ON HEALTHCARE

Healthcare systems globally are under pressure like never before. Ageing populations, increasing rates of chronic conditions, and growing surgical demand have created unprecedented challenges. Simultaneously, hospitals are navigating workforce shortages, evolving patient expectations, and tighter regulatory frameworks.

### WHY PERIOPERATIVE CARE NEEDS INNOVATION

Perioperative care – the period encompassing preparation, surgery, and recovery – presents both critical challenges and opportunities for improvement. Poor patient preparation, fragmented communication, and inefficiencies in hospital operations contribute to increased complications, longer hospital stays, and substantial costs. Consider these factors:

- **Rising surgical demand:** Australia sees more than 2.7 million surgical procedures performed annually, with elective surgeries sitting at around 86%. With our aging population and increasing rates of chronic conditions, surgical waitlists aren't where we want them to be.
- **Financial pressures:** Australian hospitals face annual readmission costs as high as AUD500 million. There is further financial strain from penalties for hospital acquired complications and other events such as preventable surgical errors that result in significantly reduced funding.
- **Evolving patient expectations:** An Australian survey revealed that 80% of patients prefer digital health tools for managing their pre- and post-surgical journeys. But many healthcare systems are still using paper-based and manual workflows when it comes to surgery.
- **Complications and delays:** 15% of elective surgeries in Australia and up to 70% globally are cancelled due to inadequate pre-surgical preparation and resource inefficiencies. This leads to increased delays and costs for the systems.

The urgency to innovate and unlock efficiencies and productivity is clear. It's time to overcome the hurdles that have held us back until now.

Pain Points	Systemic Inefficiencies	Workforce Challenges
<ul style="list-style-type: none"> <li>▪ Limited access to preoperative education</li> <li>▪ High anxiety and poor preparation</li> <li>▪ Poor postoperative support</li> <li>▪ Fragmented communication pathways</li> </ul>	<ul style="list-style-type: none"> <li>▪ Poor coordination of patient journeys</li> <li>▪ Administrative burden for clinicians</li> <li>▪ Financial penalties for sentinel events and HACs</li> <li>▪ Resource wastage</li> </ul>	<ul style="list-style-type: none"> <li>▪ Clinician burnout</li> <li>▪ Staffing shortages</li> </ul>

## WHY HASN'T PERIOPERATIVE CARE BEEN DIGITISED?

Despite widespread digitisation across other parts of the hospital – such as electronic medical records, radiology, and outpatients – perioperative care remains a stubbornly manual and fragmented domain. Much of the coordination between patients, clinicians, and administrators still happens through printed forms, spreadsheets, and time-consuming phone calls. In some cases, staff turn to tools like WhatsApp or untracked text messaging just to stay on top of tasks. While well-intentioned, these stopgaps are not secure, not auditable, and not scalable. They introduce risks to patient privacy and safety, and further expose the system's reliance on workarounds rather than sustainable processes that improve productivity and efficiency.

### MY STORY

*As a Clinical Nurse Consultant in the public health system, I've spent years trying to help patients prepare for surgery, with limited tools and even less time. I could see the inefficiencies around me every day, such as patients receiving paper instructions that are easily lost, waitlists audited manually, and no easy way to track who was ready for surgery and who needed more support. I searched for better solutions, but the processes in place made it difficult to implement anything new. Every task, whether sending information to a patient, sharing a checklist with a colleague, or auditing a waitlist, required manual workarounds that left little room for proactive care.*



*That frustration eventually led me to undertake a PhD focused on how digital innovation could be applied to surgical care. Through that research, I saw the potential for a more connected, patient-centred model: one that could support both staff and patients without adding to the workload. Today, I'm continuing that journey by working with Five Faces to help translate research into scalable, flexible digital solutions that work in real-world perioperative environments.*

### THE BARRIERS TO INNOVATION

Innovation in this space hasn't failed because the need isn't there. It has stalled because the barriers are deeply embedded. Legacy IT systems can be hard to integrate with, and perioperative workflows are anything but standardised. Each department, clinician and patient bring different requirements, and any solution must accommodate that variability. Off-the-shelf systems often only address a single piece of the puzzle, like digital forms or patient messaging, but lack the flexibility to scale.

Custom solutions, on the other hand, are often too expensive to justify for just one clinic or surgical unit, or even one hospital. And unless a platform can adapt to different workflows without requiring extensive rework, the innovation simply can't move beyond a pilot. What's needed is a different approach: one that starts with the realities of perioperative care and builds digital infrastructure that can flex and grow alongside them.

## IMPROVING CARE, NOT JUST DIGITISING IT

Digitisation in healthcare shouldn't simply mirror existing workflows in electronic form. When we digitise perioperative care, we have the opportunity to design for a better experience, not just a digital one. That means rethinking how communication, coordination, and patient support are delivered across every stage of the surgical journey. Below is a comparison of how many services operate today, and what an optimised, digital-first approach could look like.

### CONSENT PROCESS

#### Today

In many settings, consent is treated as a one-time administrative requirement, often obtained during a rushed consultation or even on the day of surgery. Patients may receive information that is dense, jargon-heavy, not tailored to their level of health literacy or even in their preferred language. The opportunity to ask follow-up questions is limited, and consent rarely evolves as the patient's understanding grows.

#### Optimised

In a digital model, consent becomes a continuous, informed process. Patients receive accessible, tailored information in formats that suit them - written, visual, in-language, or interactive. They can revisit content, ask questions through secure channels, and demonstrate understanding over time. Clinicians can see when and how patients engage, ensuring consent is meaningful and informed.

### PREOPERATIVE PERIOD

#### Today

The lead-up to surgery is often confusing and fragmented. Education materials may be inconsistent or entirely paper-based. Patients may not know who to contact with questions, and their logistical or personal needs, such as transport or home support, are rarely captured systematically. Discharge planning often begins far too late, and there is little structure to support patients in optimising their health before surgery.

#### Optimised

Digitisation enables a more proactive, coordinated approach. Patients access multimodal education (e.g. video, translated materials), manage appointments and preparation tasks digitally, and can easily reach their care team. Prehabilitation, such as smoking cessation, nutrition, or fitness, can be built into the pathway. Clinicians gain visibility into patient readiness through dashboards, allowing early intervention if a patient is at risk. Critical logistical and psychosocial data can be collected early, and vulnerable patients can be identified and supported from the outset.

**IN-HOSPITAL RECOVERY PERIOD**

**Today**

Once admitted, patients may feel disconnected from their own care. It's often unclear who is responsible for decisions, and care plans are rarely explained in a way patients can follow. Communication may be inconsistent across shifts or specialties, and psychosocial needs are often overlooked unless they are specifically raised.

**Optimised**

A digital approach allows patients to view their care plan, understand daily goals, and track recovery progress. They're engaged as active participants, supported in making shared decisions with the clinical team. Communication is consistent, coordinated, and documented, reducing duplication and confusion. Psychosocial support services can be flagged and offered as part of standard care, not just as a reactive measure.

**POSTOPERATIVE PERIOD (DISCHARGED FROM HOSPITAL)**

**Today**

After discharge, many patients feel they're on their own. There may be no clear point of contact, and complications often go unnoticed until a patient re-presents to ED or their GP. Recovery plans may be generic, confusing, or not provided at all. Follow-up is inconsistent, and handover to GPs or community care is often informal or incomplete.

**Optimised**

Digitally supported recovery ensures patients leave hospital with a clear, personalised plan. They understand their medications, activity restrictions, red flags, and when to seek help. A single point of contact via phone or digital channel means support is always accessible. Clinicians can monitor recovery progress remotely, with alerts for signs of risk. Structured follow-up (virtual or in-person) and formal handover to community providers helps ensure continuity and safety in the transition home.

*What changes when you digitise with purpose?*

Today	Optimised
✗ Paper forms, mailed letters, and phone tag	✓ Digital communication and real-time updates
✗ Consent is rushed, often misunderstood	✓ Consent is informed, ongoing, and patient-centred
✗ Patients don't know what's next	✓ Clear, personalised roadmaps across the journey
✗ Readiness is invisible until surgery day	✓ Clinicians can monitor and intervene early
✗ Follow-up is inconsistent or reactive	✓ Structured, proactive recovery support
✗ Vulnerable patients fall through the cracks	✓ Systems identify and support those at risk

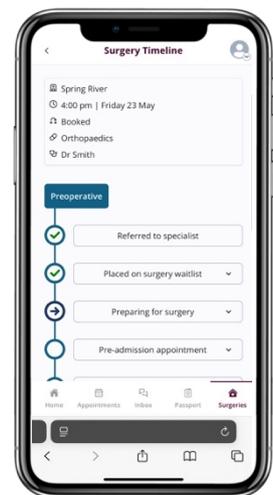
# What should a digital surgery solution do?

A digital surgery solution needs to bridge the gaps between preparation, surgery, and recovery, delivering an integrated solution to modern perioperative challenges.

## PREOPERATIVE PHASE

The solution aims to ensure patients are fully prepared, confident, and informed, reducing anxiety and enhancing readiness for surgery through seamless management of pre-surgical requirements.

- Journey visibility
- Waitlist status updates
- Personalised education modules
- Automated task management
- Virtual assessments
- Health optimisation plans
- Integrated coordination and communication with providers



*Perioperative Journey Support solution – Surgery Timeline*

## SURGERY DAY

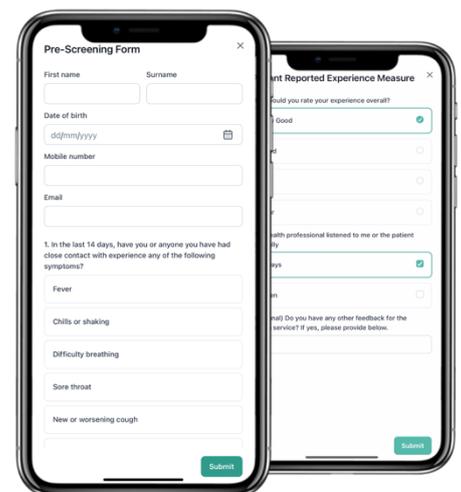
The solution focuses on creating an efficient and stress-free hospital experience by optimising patient flow, minimising delays, and ensuring clear communication between all stakeholders.

- Navigation
- Digital forms and consent
- Surgeon and team coordination
- Emergency notifications

## POSTOPERATIVE PHASE

The solution supports smooth and effective recovery by fostering patient independence, enabling timely interventions, and promoting collaboration between patients, caregivers, and healthcare teams.

- Recovery monitoring tools
- Virtual follow-ups
- Tailored care plans
- Data-driven insights
- Patient feedback collection



*Perioperative Journey Support solution – Digital forms*



## CLINICIANS AND ADMINISTRATORS

Digitisation isn't just about improving the patient experience: it also equips clinicians and administrators with the tools they need to deliver safer, more efficient, and more coordinated surgical care.

User	Features
<b>Clinicians</b>	<ul style="list-style-type: none"> <li>▪ <b>Centralised Dashboards:</b> Real-time patient progress updates and pre-surgery readiness status.</li> <li>▪ <b>Customisable Care Plans:</b> Tools to create and adapt evidence-based care pathways, ensuring personalised treatment.</li> <li>▪ <b>Secure Communication:</b> Encrypted messaging between patients and clinical teams for seamless communication.</li> </ul>
<b>Administrators</b>	<ul style="list-style-type: none"> <li>▪ <b>Data Analytics Dashboards:</b> Insights into surgical outcomes, patient trends, and operational efficiency.</li> <li>▪ <b>Resource Optimisation Tools:</b> Improved scheduling and capacity management to maximise operating room utilisation.</li> <li>▪ <b>Role-Based Access Control:</b> Ensuring data security and compliance with healthcare regulations.</li> </ul>

## BENEFITS ACROSS STAKEHOLDERS

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Digitising perioperative care not only addresses pain points for individual stakeholders but also aligns hospital operations with broader healthcare goals, ensuring sustainability and improved outcomes at every level.

### FOR PATIENTS



- Enhanced health literacy and empowerment
- Reduced anxiety
- Improved surgical preparedness and enhanced recovery
- Improved health outcomes and journey satisfaction

### FOR CLINICIANS



- Streamlined workflows and reduced administrative burden
- Improved patient outcomes through early risk detection
- Secure communication tools enable seamless interaction between multidisciplinary teams
- Real-time data insights

### FOR HOSPITALS AND HEALTH SERVICES



- Cost savings through reduced cancellations and readmissions
- Avoiding financial penalties for poor health outcomes
- Optimised resource allocation and operating room utilisation
- Enhanced Patient Satisfaction
- Improved governance and hospital accreditation compliance

## THE FINANCIAL CASE

### UNDERSTANDING THE ACTIVITY-BASED FUNDING (ABF) MODEL

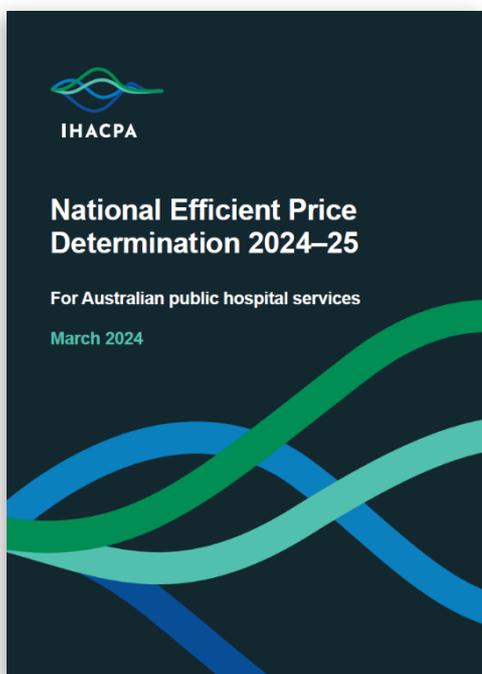
The ABF model is a funding framework used by Australian hospitals to allocate resources based on the number and complexity of services delivered. Under ABF:

- **Weighted Activity Units (WAUs)** are assigned to patient episodes, with higher weights for complex cases.
- **Efficiency Targets:** Hospitals are reimbursed for services at a National Efficient Price (NEP), incentivising cost-efficient care while maintaining quality standards.
- **Penalties:** Hospitals face reduced funding for complications like hospital-acquired infections, readmissions, or sentinel events, which are categorised as avoidable and thus not reimbursed.

The ABF system emphasises the importance of delivering high-quality, efficient care. Solutions that improve patient outcomes, reduce complications, and optimise resource utilisation align directly with these goals, enhancing a hospital's financial stability and reputation.

### RETURN ON INVESTMENT (ROI): SIX KEY AREAS

The Digital Surgery Solution delivers measurable financial and operational returns through the following avenues:



1. **Improved Patient Outcomes and Operational Efficiency:** Streamlined workflows minimise inefficiencies, allowing treatment of patients within WAU funding allocations.
2. **Reduced Financial Penalties:** Avoidance of sentinel events and HACs directly reduces penalties.
3. **Optimising Hospital Resources and Reducing Operational Costs:** Real-time data on patient readiness enables better scheduling, reducing idle time and ensuring optimal use of operating rooms.
4. **Improved Post-Surgical Care and Reduced Readmissions:** Symptom trackers ensure early detection of complications.
5. **Maximising Financial Stability Through Governance Compliance:** Compliance with Safety and Quality standards ensures uninterrupted funding under ABF and strengthens hospital reputation.
6. **Enhancing Data Collection and Reporting for Financial Reimbursement:** Improvement in reporting accuracy ensures hospitals claim all eligible reimbursements.

## WHAT TO LOOK FOR IN A DIGITAL SURGERY SOLUTION

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### THE ISSUE WITH MANY SOLUTIONS

There are many digital tools available today that aim to support parts of the surgical journey, like helping with early screening, scheduling, or post-op check-ins. But most of these tools only cover a small piece of the process. Because they don't work together or adapt well to real-world workflows, they can actually create more problems: care gets fragmented, staff end up juggling multiple platforms, and patients are left confused or unsupported.

Some solutions also struggle to handle the complexity of real perioperative care. Surgical pathways often involve multiple teams, high-risk patients, and changing circumstances. A one-size-fits-all tool might work for basic cases but can't keep up with the personalised needs of more complex or multidisciplinary care. Others may lack the flexibility to scale across public hospitals and private clinics, or have trouble connecting with older IT systems, making them hard to implement and maintain.

There are also important gaps in patient experience. Some tools are focused mostly on staff workflows, with limited attention to what the patient sees, feels, or needs. If the platform isn't easy to use, doesn't offer clear education, or isn't designed with accessibility in mind, patients may disengage or miss key information.

That's why it's important to look beyond single-use tools or pilot-ready apps. A truly effective digital surgery solution should connect the entire journey, from the first consultation to recovery at home, while supporting the needs of both staff and patients. It needs to be flexible, secure, easy to use, and built to scale in the complex environments we work in every day.

### A CHECKLIST

Choosing the right digital solution for surgical care isn't just about going paperless; it's about finding a way to support safer, more connected, and more efficient care across the full surgical journey. Here are the key features and capabilities to look for:

#### End-to-End Journey Support

Look for a solution that connects the entire surgical pathway, from preoperative preparation to post-discharge recovery, so that information flows seamlessly between patients, clinicians, and administrators at every stage.

#### Customisability and Flexibility

Every department, specialty, and patient population has unique needs. A good solution shouldn't be overly prescriptive; it should allow services to pick and choose the components that suit their clinical models, workflows, and patient demographics. It should also support ongoing change: workflows, messaging, and forms should be easy to update as processes evolve, without needing to go back to

the vendor for every adjustment. True flexibility means teams can adapt and improve their approach over time, not just at the point of implementation.

### **Scalability Across Systems**

Whether you're digitising a single surgical department, a hospital-wide program, or a district-wide initiative in public health, the platform must be built to scale. In the private sector, it should also support rollout across multiple sites or nationwide provider networks – including accommodating different source systems at each location.

### **Real-Time Monitoring and Decision Support**

Dashboards and data tools should enable staff to track patient readiness, identify risks early, and make informed decisions, reducing cancellations, improving outcomes, and using resources more effectively to enhance productivity.

### **Strong Patient Engagement Features**

Digital tools should empower patients, not just inform them. Look for features like interactive education, personalised task lists, appointment tracking, and clear channels for asking questions or reporting concerns.

### **Seamless Integration with Existing Systems**

A solution that can integrate with major EMRs, hospital information systems, patient administration systems, and clinical applications – via FHIR or HL7 where needed. This avoids duplication, reduces administrative overhead, and ensures continuity of care.

### **Outcome-Focused Design**

Ultimately, the solution should help reduce delays, improve safety, and support better clinical and financial outcomes. It should align with the goals of value-based care, not just process digitisation.

### **Designed for Real-World Use**

Accessibility, usability, and language support matter. A good solution should be intuitive for patients and staff alike, including those with low digital literacy or complex health needs.

## CONCLUSION: MAKING SURGERY WORK BETTER – FOR EVERYONE

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The way we support patients through surgery is ready for change. Digitising perioperative care isn't just about ticking boxes or going paperless; it's about making the experience clearer, safer, and more connected for both patients and staff.

As a perioperative CNC, I've seen the challenges firsthand, and I know many others are facing the same frustrations. That's what led me to complete a PhD on digital innovation in surgical care, and now I'm working with Five Faces on further research and creating a flexible, real-world solution.

If anything in this paper resonates with you, I'd love to hear from you. Whether you're exploring solutions for your department or just want to see what the solution looks like, feel free to get in touch.

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