



Managed Equipment Services

Context

Managed equipment services (MES) is the outsourcing of medical equipment to a third-party provider with expertise in the service area.¹ The MES supplier is responsible for procuring, installing, and training users, as well as managing and maintaining the portfolio of medical equipment.¹ An MES is intended to ensure that medical equipment is maintained to a high standard and is replaced through an agreed investment plan.² This has been described as a total equipment solution.³

An MES agreement represents a break with the traditional capital-funded acquisition model used in Canada for equipment procurement.⁴ Currently, most hospitals or health care systems in Canada are financially responsible for equipment ownership.⁵ An MES agreement, allows health care providers to replace medical equipment while deferring upfront capital outlay costs.^{4,5} An MES usually integrates additional services intended to optimize the life cycle of equipment.² Costs for these bundled services are spread through regular payments over the lifetime of the MES contract.⁶

MES agreements are common in the US,⁷ the UK, Germany, Spain, and Australia,⁸ and have been implemented in at least one developing country.⁹ There has been limited adoption of MES agreements in Canada but there is growing interest. Growth in the MES market may be due to rising expenditures for refurbishing, maintaining and operating equipment, challenges with capital expenditure planning, increasing constraints on budgets, and the need for maintaining upgraded equipment in organizations.^{7,10} With the lifespan of imaging equipment narrowing,⁷ due to advances in technological innovation that allow newer generations of equipment to operate more efficiently,⁷ as well as the growing demand for imaging exams,¹¹ which increases the use of imaging equipment and consequently compresses its optimal lifespan,⁷ health care delivery organizations are taking a closer look at expenses in all aspects of their business, particularly operations.¹²

Objective

This report summarizes information on MES to help inform decisions about their uptake in Canadian medical imaging facilities.

The key objectives are, as follows:

- to outline some reported strengths and weaknesses of these services
- to identify the extent of their use in Canada in medical imaging.

About This Document

This document summarizes information identified through a limited literature search on MES agreements.

Results

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An MES is an equipment service agreement that provides the expertise as well as the resources needed to integrate various operational components of equipment provision.⁸ An MES may integrate some or all of the following services: planning, procurement, installation, training, maintenance, repair, performance monitoring, data analytics, technology upgrades, and replacement services.^{8,9} An MES contract may also include professional consulting services, such as process improvement, and asset and vendor management.^{9,13,14}

Managed equipment services are contracts signed between a health care provider and a private sector operator.¹¹ An MES operator owns the equipment for the lifecycle of the agreement and equipment is replaced on a predictable basis, in accordance with terms established within the contract.² The broad spectrum of services available for equipment maintenance may minimize equipment downtime.¹⁵

From a patient perspective, an MES agreement provides access to updated imaging equipment that may improve diagnosis and safety, and help to reduce wait times.¹⁴ From a service perspective, equipment downtime may be reduced through contractual uptime guarantees which can promote service reliability and allows staff to focus on patient care, rather than administrative considerations.¹⁴

Public-Private Partnerships

An MES is a type of public-private partnership (P3).¹⁶ A P3 is a method of financing public projects in which private sector operators receive contracts to complete work in the public sector.¹⁷ The private sector pays the upfront costs associated with the projects, and health care systems are required to make scheduled payments to the private operator after they have leased equipment to the public sector.¹⁷ The P3 model is most often used where there are insufficient public funds to meet needs.¹⁸

P3s provide governments with alternative methods of financing infrastructure development and service delivery.¹⁹ Within the health care sector, the theoretical value of P3 arrangements is focused on benefits to the health care system through improvements in efficiency and effectiveness in service provision, including access to health care services, cost savings, and providing opportunities for mutual learning and knowledge sharing.²⁰ This can enable medical imaging departments to concentrate on their core role of providing a high standard of clinical services to patients.¹ The main arguments in favour of these types of partnerships include:²¹

- governments alone do not have the capacity to address health issues, and strong and effective partnerships between the public and private sector may be better able to support health system sustainability
- the capacity, quality and reach of health services is enriched by the expertise, data, and resources of the private sector
- moving health beyond the public sector can help raise awareness of health care issues in other sectors, creating opportunities to engage with new partners and increase momentum for health improvement
- potentially boost the effectiveness of industry regulation by the joint development of best practices
- encourage the development of sustainable business models and promote innovation.

Despite arguments in favour of P3s around the world, some opponents have criticized them as a potential strategy to hide the gradual privatization of public services.^{22,23} Further, there are some reports that demonstrate these partnerships may cost more than traditional payment models, deliver less, and may lack accountability.^{10,24,25} Some other common concerns associated with P3s include:²¹

- profits from some private sector products or services may not be compatible with the delivery of health due to, real or perceived, conflicts of interest
- these relationships may potentially legitimize the private sector even when some products or service may not contribute to good health
- relationships built during P3s may be used by the private sector to grow political influence and/or market gain.

Funding Cycles and Contract Terms

The average term negotiated for an MES contract is usually long-term, typically ranging from between 15 and 30 years.²⁶ Payments for MES agreements are fixed, with regular installments over the lifetime of the agreement or for a set period.⁸

The predictability of annual service payment schedules can help improve financial forecasting, ensure financial predictability, and allow for a single payment structure.⁸ At the same time, many equipment procurement planning cycles across Canadian jurisdictions are for 5 years²⁷ and may not easily accommodate these types of longstanding commitments.

Political will is an important enabling condition for a successful MES, and changes in political direction may represent the biggest threat to the successful fulfillment of these types of agreements.^{19,23} To facilitate the success of an MES agreement over the long-term, and to help gain political buy-in, there is a need for both public and private parties to ensure strong support, commitment, collaboration and communications for the agreement.^{19,20}

It is noted that multi-year contracts, can limit a health care facility's ability to change to a different provider, and in doing so may increase their dependence on their MES provider.²⁸ As well, due to the longevity of an MES agreement, if health care providers feel that their MES has failed to fulfill contractual deliverables or if health care priorities have shifted since the contract was signed, it may be challenging to terminate or change the contract, and there may be financial and legal implications.

Funding and Procurement Model

The conventional financing mechanisms in Canada for imaging equipment procurement, involves jurisdictions receiving the majority of their funding from publicly funded sources through capital budgets, as well as from charitable donations.¹¹ With an MES funding agreement, the private sector operator owns the equipment, and no upfront payment for the installation of new equipment is required by the health care provider,⁸ alleviating them from the large capital investment of equipment ownership.⁸

Many Canadian jurisdictions have, or are moving toward, centralized procurement processes.²⁹ Centralized procurement bodies can facilitate opportunities for cost savings from bulk purchasing practices within or between jurisdictions.^{29,30} It is unclear how easily MES agreements may fit into centralized procurement frameworks within the Canadian health care context, especially given the longevity of MES contracts. Special consideration may need to be given to the extent to which MES agreements can contribute to overall cost savings within existing procurement and health system structures, and whether the extent of potential cost savings is dependent on the size and available resources of health providers.

Cost Savings

Cost reductions are reported to be one of the key benefits of an MES agreement.¹ These savings are mainly attributed to embedded expertise of the private sector operator (related to product design, operation, capabilities and function⁷) and economies of scale in the private sector.^{1,31} In the health care setting it is reported that MES agreements may contribute to capital savings of up to 10%, compared to conventional procurement models.¹⁴ Annual operating savings of between 10% and 15% have been reported,¹⁴ although operating savings of up to 25%, compared to traditional manual management, have also been stated.⁷ In part, these savings may be attributed to the fact that some hospitals procure imaging equipment and their accompanying services (such as training, maintenance and financing), on a piecemeal basis, often from different manufacturers, resulting in higher costs and administrative resources than if they were bundled together.⁸

Questions have been raised regarding the extent to which cost savings are achieved using MES agreements. Some of these concerns are related to often higher project costs that can, at times, be encountered in the private sector compared to those in the public sector.²⁵ It has been noted that private financing for procurement may be subject to 2 to 3 times higher borrowing interest rates compared to public borrowing, and with a requirement for financiers to provide a return on investment to their shareholders, this can at times result in higher project costs compared to those in the public sector.²⁵ In 2014, the Ontario Auditor General reported in a review of 74 of the P3s, that they collectively cost the province \$8 billion more than if they had been procured in the public domain.³² Further, in 2017, the Ontario Auditor General reported that the 4 hospitals with P3 maintenance contracts had to request more funding or experienced funding shortfalls due to the higher costs or additional work not covered by the original contract.²⁵ Similarly, a report by the British Columbia Auditor General suggested the 16 P3 projects cost the province nearly twice as much compared to public financing.²⁵ Similar experiences have been reported internationally, for example according to an investigation into one of the world's largest health care MES contracts, it was reported that the price of an ultrasound unit may have been inflated by more than 6 times its market value.³³

Accountability and Transparency

Some concerns have been documented about a potential loss of accountability and transparency to public stakeholders with these types of partnerships.¹⁸ This may, in part, be due to the fact that the procurement processes between public and private sectors are different,¹⁸ and that many financial details of a P3 are unavailable to the public due to reasons associated with confidentiality. There are also sensitivities related to sharing information of a proprietary nature, as well as information classified as intellectual property and private.¹⁸ Consequently, it may be challenging for the public sector to fully satisfy expectations of transparency and accountability with MES agreements.³⁴ To facilitate the adoption of these processes governments in Canada are mandating that P3 relationships be as transparent as possible and that there is appropriate accountability.³⁴

For example, a high profile MES agreement in Kenya, for a broad range of specialized medical equipment for public hospitals across the country, worth \$US 580 million,³⁵ was criticized for a lack of transparency and accountability relating to contracts, costing, and access to equipment.^{36,37} While it has been noted that, overall, the MES agreement increased the number and homogenous distribution of imaging equipment in the public sector,³⁸ in some instances, imaging equipment, approved under the MES agreement was not delivered, remained uninstalled (often because a hospital's electricity supply was not upgraded to the level required for use of the equipment), and some equipment were sent to the wrong locations. An investigation into the MES noted that some hospitals were not aware of the exact equipment they were to receive and overall official documentation on the program and procurement process was lacking.³⁷ Publicly available documentation may help to build confidence and aid transparency in these types of agreements.¹⁹

Procurement Process

Health care P3s are complex undertakings that require thorough consideration of multiple factors, including: local health care needs; funding availability and requirements; political and community acceptance for transferring responsibility to a non-government entity; and public sector capacity to manage the contractual risks associated with that transfer.¹⁹

It has been noted that MES may not always work well in hospitals that have a single agreement for all types of equipment, including surgical rooms, environmental systems, and different types of software.³⁹ In these instances it has been reported that it can be challenging to manage different competing priorities, and that limiting MES agreements to specific areas such as cardiology and diagnostic imaging may be more manageable and effective.³⁹ This may be because the relationships and agreements governing these contracts are complex and prioritizing competing demands may be challenging.

Equipment Replacement Cycles

An MES provides guaranteed asset replacement on fixed cycles allowing for the avoidance of technology obsolescence and access to innovation.¹⁴ The portfolio of equipment is replaced by the MES provider on a predictable, pre-arranged basis, in accordance with terms set out in the legal agreement. Usually, at least 1 cycle of equipment replacement occurs during the life of the contract, as well as ongoing maintenance and staff training.¹ The cycle time can vary based on the organization's size and scale.⁸ In some instances, new lower class systems are installed and are replaced more rapidly, and in other instances high class refurbished systems are introduced to ensure that hospitals can remain within the clinical and technological requirements of their departments.²

An anecdotal comment from a Canadian medical imaging decision-maker noted that if a health care provider already has a good understanding of their inventory of medical imaging equipment and the replacement requirements, a third party may not be necessary to provide an equipment replacement assessment. As well, replacing equipment is associated with complexities, and assurances should be sought from the MES operator that they are aware of issues such as the implications of equipment that are adjacent to surgery rooms or other hospital equipment that cannot be disrupted.

As well, the Canadian Medical Imaging Inventory observed that around 40% of CT and MRI units in Canada are older than 10 years,¹¹ which is an indicator as to the number of units that would require replacement. If MES agreements were adopted on a wide scale, there will likely be disruption to imaging services while new equipment is installed.

Technology Banding

The installation of new equipment is usually managed with an MES through technology banding.⁴⁰ Prior to negotiating an agreement, the MES audits existing equipment, and each piece of equipment is placed in a band that identifies its placement in the spectrum of technology currently available for that type of equipment.¹ Often, there are 4 bands of equipment types, ranging from clinical workhorse to state of the art units. When equipment is replaced, the new equipment is drawn from the same band as the original device.¹

While technology banding ensures that future equipment are equivalent to those that are being replaced,⁴¹ it has been noted that technology banding could be used to penalize technologies that are considered less valuable, or to incentivize the more valuable ones.⁴² If this were to happen, this may put some hospitals at a disadvantage, particularly those that are more likely to have equipment categorized as a workhorse, which is the case in many rural and remote settings. In this scenario, technology banding may make advanced technologies less accessible to patients in these settings under an MES agreement. At the same time, these agreements are intended to be flexible, and participating hospitals may request additional new equipment or change the band of an item of equipment using a contract variation.¹

Technology Compatibility

Often software and firmware is used to assist in managing the maintenance of equipment under MES agreements to ensure that medical equipment is effectively maintained to specific standards and the latest versions are used.^{1,43} If the software used by the MES is not compatible with technology already integrated into imaging departments, this could represent a barrier to its use.

As well, some MES providers may request replacement of informatics infrastructures, to support use of their own tools to collect data on the performance of equipment. If this is the case, health care facilities would have to ensure that the strategies MES use to manage data collection are in alignment with their own policies.

Privacy regulations aimed at protecting patient data may also be a consideration.¹⁴

Risk Allocation

An MES agreement allows for a transfer of risk from the health care facility to an equipment operator,¹⁹ who may be better positioned to manage those risks.¹ Under this arrangement, the equipment operator is held accountable for defined outcomes.¹⁹ The key areas of risk which are typically transferred from a health care provider to a private sector operator include:

- changes in cost of equipment or maintenance
- equipment availability and uptime
- ensuring safety notices are actioned
- maintenance of records of equipment history and training
- cost of spare parts
- recruitment and retention of expert staff
- building specification, design, and project management.

The transfer of risk must be closely managed, with key roles and responsibilities by partners clearly laid out in the contract.¹⁹ By shifting most of the risk to the private sector operator, the public sector may be better able to mitigate the potential for cost overruns or project delays.¹⁹ This may not always be the case, however. For example, the Ontario Auditor General has previously reported that this risk transfer factor may be inflated without evidence, and that the public sector could still bear the consequences and cost when things go wrong.²⁵

Regulatory Requirements

In Canada, MES agreements are managed under P3 frameworks, which are developed at the provincial or territorial level.⁴⁴ The federal government also has 3 organizations involved in P3 development.³⁴ In some jurisdictions, such as Alberta, British Columbia, and Ontario, P3 frameworks are embodied in policies.⁴⁴ To ensure that MES agreements protect all partners equally, legally binding documentation, designed to attract investment, may be helpful.

Staffing

It has been reported that there may be a shortage of professionals in MES who have the appropriate expertise to manage these types of agreements.^{14,23}

MES in Canada

The adoption of MES agreements in the health care sector is currently limited to some hospitals located in Ontario. The first hospital MES agreement was implemented by the Willian Osler Health System in 2015, for cardiology and diagnostic imaging equipment.³⁹ This was followed by the Humber River Hospital in Toronto implementing an MES agreement, also in 2015, to manage the ongoing acquisition, installation and replacement of most of their medical technology and provide technology maintenance services for their diagnostic imaging, surgical, cardiology and emergency departments.^{39,45} As well, Mackenzie Health partnered with a private operator to manage a broad range of equipment to be used across all major departments within their hospitals, as well as practice management solutions for imaging departments.¹⁵ Hamilton Health Sciences established an MES agreement for diagnostic imaging equipment in 2020.¹⁵

Conclusion

With the optimal lifespan of imaging equipment narrowing, access to new imaging equipment without upfront capital payment, will likely present an attractive proposition to public suppliers of imaging services when faced with the reality of fiscal consolidation. Predictability in the planning, acquisition and maintenance of imaging equipment may help decision-makers to prepare for the future. As well, protection against obsolescence may play an important role in improving patient diagnosis and safety, as well as help to reduce wait times.

MES agreements in the health care setting in Canada are currently limited to individual hospitals or small hospital systems in Ontario. The expansion of MES agreements in Canada will likely be facilitated by transparent and accountable procurement processes, as well as clearly defined expectations and outcomes that are incorporated into legally binding and publicly available documentation.

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