

GE Healthcare

MUSE™ v9 Cardiology Information System HL7 Interface Reference Manual

Software Version 9
2059568-021 Revision B



MUSE Cardiology Information System HL7
Interface
English
© 2015 General Electric Company.
All Rights Reserved.

Publication Information

The information in this document applies only to MUSE™ v9 Cardiology Information System. It does not apply to earlier product versions. Due to continuing product innovation, specifications in this manual are subject to change without notice.

MUSE and MAC are trademarks owned by GE Medical Systems *Information Technologies* Inc., a General Electric Company going to market as GE Healthcare. All other trademarks contained herein are the property of their respective owners.

The document part number and revision are on each page of the document. The revision identifies the document's update level. The revision history of this document is summarized in the following table.

Revision	Date	Comments
A	27 April 2015	Initial release.
B	17 July 2015	Customer release.

To access other GE Healthcare Diagnostic Cardiology documents, go to the Common Documentation Library (CDL), located at www.gehealthcare.com/documents, and click **Cardiology**.

To access Original Equipment Manufacturer (OEM) documents, go to the device manufacturer's website.

This document is intended to be a technical reference manual for GE Healthcare internal and external customers implementing the HL7 interface. It is meant to be used to help the person, or persons, responsible for configuring the HL7 interface understand the features and limitations of a MUSE HL7 interface with their HIS system.

NOTE:

All illustrations in this document are provided as examples only. Depending on system configuration, screens in the document may differ from the screens on your system.

All patient names and data are fictitious. Any similarity to actual persons is coincidental.

Service Manual Language Information

WARNING (EN)	<p>This service manual is available in English only.</p> <ul style="list-style-type: none">• If a customer's service provider requires a language other than English, it is the customer's responsibility to provide translation services.• Do not attempt to service the equipment unless this service manual has been consulted and is understood.• Failure to heed this warning may result in injury to the service provider, operator, or patient, from electric shock, mechanical or other hazards.
ПРЕДУПРЕЖДЕНИЕ (BG)	<p>Това упътване за работа е налично само на английски език.</p> <ul style="list-style-type: none">• Ако доставчикът на услугата на клиента изиска друг език, задължение на клиента е да осигури превод.• Не използвайте оборудването, преди да сте се консултирали и разбрали упътването за работа.• Неспазването на това предупреждение може да доведе до нараняване на доставчика на услугата, оператора или пациент в резултат на токов удар или механична или друга опасност.
警告 (ZH-CN)	<p>本维修手册仅提供英文版本。</p> <ul style="list-style-type: none">• 如果维修服务提供商需要非英文版本，客户需自行提供翻译服务。• 未详细阅读和完全理解本维修手册之前，不得进行维修。• 忽略本警告可能对维修人员，操作员或患者造成触电、机械伤害或其他形式的伤害。
警告 (ZH-TW)	<p>本維修手冊只提供英文版。</p> <ul style="list-style-type: none">• 如果客戶的維修人員有英語以外的其他語言版本需求，則由該客戶負責提供翻譯服務。• 除非您已詳閱本維修手冊並了解其內容，否則切勿嘗試對本設備進行維修。• 不重視本警告可能導致維修人員、操作人員或病患因電擊、機械因素或其他因素而受到傷害。

Service Manual Language Information (cont'd.)

<p>UPOZORENJE (HR)</p>	<p>Ove upute za servisiranje dostupne su samo na engleskom jeziku.</p> <ul style="list-style-type: none"> • Ukoliko korisnički servis zahtijeva neki drugi jezik, korisnikova je odgovornost osigurati odgovarajući prijevod. • Nemojte pokušavati servisirati opremu ukoliko niste konzultirali i razumjeli ove upute. • Nepoštivanje ovog upozorenja može rezultirati ozljedama servisnog osoblja, korisnika ili pacijenta prouzročenim električnim udarom te mehaničkim ili nekim drugim opasnostima.
<p>VAROVÁNÍ (CS)</p>	<p>Tento provozní návod existuje pouze v anglickém jazyce.</p> <ul style="list-style-type: none"> • V případě, že externí služba zákazníkům potřebuje návod v jiném jazyce, je zajištění překladu do odpovídajícího jazyka úkolem zákazníka. • Nesnažte se o údržbu tohoto zařízení, aniž byste si přečetli tento provozní návod a pochopili jeho obsah. • V případě nedodržování této varování může dojít k poranění pracovníka prodejního servisu, obslužného personálu nebo pacientů vlivem elektrického proudu, respektive vlivem mechanických či jiných rizik.
<p>ADVARSEL (DA)</p>	<p>Denne servicemanual findes kun på engelsk.</p> <ul style="list-style-type: none"> • Hvis en kundes tekniker har brug for et andet sprog end engelsk, er det kundens ansvar at sørge for oversættelse. • Forsøg ikke at servicere udstyret medmindre denne servicemanual har været konsulteret og er forstået. • Manglende overholdelse af denne advarsel kan medføre skade på grund af elektrisk, mekanisk eller anden fare for tekniker, operatøren eller patienten.
<p>WAARSCHUWING (NL)</p>	<p>Deze service manual is alleen in het Engels verkrijgbaar.</p> <ul style="list-style-type: none"> • Indien het onderhoudspersoneel een andere taal nodig heeft, dan is de klant verantwoordelijk voor de vertaling ervan. • Probeer de apparatuur niet te onderhouden voordat deze service manual geraadpleegd en begrepen is. • Indien deze waarschuwing niet wordt opgevolgd, zou het onderhoudspersoneel, de gebruiker of een patiënt gewond kunnen raken als gevolg van een elektrische schok, mechanische of andere gevaren.
<p>HOIATUS (ET)</p>	<p>Käesolev teenindusjuhend on saadaval ainult inglise keeles.</p> <ul style="list-style-type: none"> • Kui klienditeeninduse osutaja nõuab juhendit inglise keelest erinevas keeles, vastutab klient tõlketeenuse osutamise eest. • Ärge üritage seadmeid teenindada enne eelnevalt käesoleva teenindusjuhendiga tutvumist ja sellest aru saamist. • Käesoleva hoiatuse eiramine võib põhjustada teenuseosutaja, operaatori või patsiendi vigastamist elektrilöögi, mehaanilise või muu ohu tagajärjel.
<p>VAROITUS (FI)</p>	<p>Tämä huolto-ohje on saatavilla vain englanniksi.</p> <ul style="list-style-type: none"> • Jos asiakkaan huoltohenkilöstö vaatii muuta kuin englanninkielistä materiaalia, tarvittavan käännöksen hankkiminen on asiakkaan vastuulla. • Älä yritä korjata laitteistoa ennen kuin olet varmasti lukenut ja ymmärtänyt tämän huolto-ohjeen. • Mikäli tätä varoitusta ei noudateta, seurauksena voi olla huoltohenkilöstön, laitteiston käyttäjän tai potilaan vahingoittuminen sähköiskun, mekaanisen vian tai muun vaaratilanteen vuoksi.

Service Manual Language Information (cont'd.)

<p>ATTENTION (FR)</p>	<p>Ce manuel technique n'est disponible qu'en anglais.</p> <ul style="list-style-type: none"> • Si un service technique client souhaite obtenir ce manuel dans une autre langue que l'anglais, il devra prendre en charge la traduction et la responsabilité du contenu. • Ne pas tenter d'intervenir sur les équipements tant que le manuel technique n'a pas été consulté et compris. • Le non-respect de cet avertissement peut entraîner chez le technicien, l'opérateur ou le patient des blessures dues à des dangers électriques, mécaniques ou autres.
<p>WARNUNG (DE)</p>	<p>Diese Serviceanleitung ist nur in englischer Sprache verfügbar.</p> <ul style="list-style-type: none"> • Falls der Kundendienst eine andere Sprache benötigt, muss er für eine entsprechende Übersetzung sorgen. • Keine Wartung durchführen, ohne diese Serviceanleitung gelesen und verstanden zu haben. • Bei Zuwiderhandlung kann es zu Verletzungen des Kundendiensttechnikers, des Anwenders oder des Patienten durch Stromschläge, mechanische oder sonstige Gefahren kommen.
<p>ΠΡΟΕΙΔΟΠΟΙΗΣΗ (EL)</p>	<p>Το παρόν εγχειρίδιο σέρβις διατίθεται στα αγγλικά μόνο.</p> <ul style="list-style-type: none"> • Εάν το άτομο παροχής σέρβις ενός πελάτη απαιτεί το παρόν εγχειρίδιο σε γλώσσα εκτός των αγγλικών, αποτελεί ευθύνη του πελάτη να παρέχει υπηρεσίες μετάφρασης. • Μην επιχειρήσετε την εκτέλεση εργασιών σέρβις στον εξοπλισμό εκτός εάν έχετε συμβουλευτεί και έχετε κατανοήσει το παρόν εγχειρίδιο σέρβις. • Εάν δεν λάβετε υπόψη την προειδοποίηση αυτή, ενδέχεται να προκληθεί τραυματισμός στο άτομο παροχής σέρβις, στο χειριστή ή στον ασθενή από ηλεκτροπληξία, μηχανικούς ή άλλους κινδύνους.
<p>FIGYELMEZTETÉS (HU)</p>	<p>Ez a szerviz kézikönyv kizárólag angol nyelven érhető el.</p> <ul style="list-style-type: none"> • Ha a vevő szerviz ellátója angoltól eltérő nyelvre tart igényt, akkor a vevő felelőssége a fordítás elkészítése. • Ne próbálja elkezdni használni a berendezést, amíg a szerviz kézikönyvben leírtakat nem értelmezték és értették meg. • Ezen figyelmeztetés figyelmen kívül hagyása a szerviz ellátó, a működtető vagy a páciens áramütés, mechanikai vagy egyéb veszélyhelyzet miatti sérülését eredményezheti.
<p>ADVÖRUN (IS)</p>	<p>Þessi þjónustuhandbók er eingöngu fánleg á ensku.</p> <ul style="list-style-type: none"> • Ef að þjónustuveitandi viðskiptamanns þarfnast annars tungumáls en ensku, er það skylda viðskiptamanns að skaffa tungumálþjónustu. • Reynið ekki að afgreiða tækið nema þessi þjónustuhandbók hefur verið skoðuð og skilin. • Brot á að sinna þessari aðvörun getur leitt til meiðsla á þjónustuveitanda, stjórnanda eða sjúklingi frá raflosti, vélrænum eða öðrum áhættum.
<p>PERINGATAN (ID)</p>	<p>Manual servis ini hanya tersedia dalam bahasa Inggris.</p> <ul style="list-style-type: none"> • Jika penyedia jasa servis pelanggan memerlukan bahasa lain selain dari Bahasa Inggris, merupakan tanggung jawab dari penyedia jasa servis tersebut untuk menyediakan terjemahannya. • Jangan mencoba melakukan servis terhadap perlengkapan kecuali telah membaca dan memahami manual servis ini. • Mengabaikan peringatan ini bisa mengakibatkan cedera pada penyedia servis, operator, atau pasien, karena terkena kejut listrik, bahaya mekanis atau bahaya lainnya.

Service Manual Language Information (cont'd.)

<p>AVVERTENZA (IT)</p>	<p>Il presente manuale di manutenzione è disponibile soltanto in Inglese.</p> <ul style="list-style-type: none"> • Se un addetto alla manutenzione richiede il manuale in una lingua diversa, il cliente è tenuto a provvedere direttamente alla traduzione. • Si proceda alla manutenzione dell'apparecchiatura solo dopo aver consultato il presente manuale ed averne compreso il contenuto. • Il non rispetto della presente avvertenza potrebbe far compiere operazioni da cui derivino lesioni all'addetto, alla manutenzione, all'utilizzatore ed al paziente per folgorazione elettrica, per urti meccanici od altri rischi.
<p>警告 (JA)</p>	<p>このサービスマニュアルは英語版しかありません。</p> <ul style="list-style-type: none"> • サービスを担当される業者が英語以外の言語を要求される場合、翻訳作業はその業者の責任で行うものとさせていただきます。 • このサービスマニュアルを熟読し、十分に理解をした上で装置のサービスを行ってください。 • この警告に従わない場合、サービスを担当される方、操作員あるいは患者が、感電や機械的又はその他の危険により負傷する可能性があります。
<p>경고 (KO)</p>	<p>본 서비스 지침서는 영어로만 이용하실 수 있습니다.</p> <ul style="list-style-type: none"> • 고객의 서비스 제공자가 영어 이외의 언어를 요구할 경우, 번역 서비스를 제공하는 것은 고객의 책임입니다. • 본 서비스 지침서를 참고했고 이해하지 않는 한은 해당 장비를 수리하려고 시도하지 마십시오. • 이 경고에 유의하지 않으면 전기 쇼크, 기계상의 혹은 다른 위험으로부터 서비스 제공자, 운영자 혹은 환자에게 위해를 가할 수 있습니다.
<p>ЕСКЕРТУ (KK)</p>	<p>Бұл қызмет көрсету бойынша нұсқаулығы тек ағылшын тілінде қолжетімді.</p> <ul style="list-style-type: none"> • Тұтынушының қызмет провайдері ағылшын тілінен басқа тілдегі нұсқаны талап етсе, аудару бойынша қызметтерімен қамтамасыз ету тұтынушы жауапкершілігінде болуы тиіс. • Бұл қызмет көрсету бойынша нұсқаулығын назарға алып, түсінбегенше, жабдыққа қызмет көрсетуден бас тартыңыз. • Бұл ескертуді елемей қызмет провайдері, оператор немесе емделушінің электр шоғынан, механикалық немесе басқа қауіптер нәтижесінде жарақат алуына әкелуі мүмкін.
<p>BRĪDINĀJUMS (LV)</p>	<p>Šī apkopotāju rokasgrāmata ir pieejama tikai angļu valodā.</p> <ul style="list-style-type: none"> • Ja apkalpošanas sniedzējam nepieciešama informācija citā, nevis angļu, valodā, klienta pienākums ir nodrošināt tās tulkošanu. • Neveiciet aprīkojuma apkopi, neizlasot un nesaprotot apkopotāju rokasgrāmatu. • Šī brīdinājuma neievērošana var radīt elektriskās strāvas trieciena, mehānisku vai citu risku izraisītu traumu apkopes sniedzējam, operatoram vai pacientam.
<p>ĮSPĖJIMAS (LT)</p>	<p>Šis eksploataavimo vadovas yra prieinamas tik anglų kalba.</p> <ul style="list-style-type: none"> • Jei kliento paslaugų tiekėjas reikalauja vadovo kita kalba - ne anglų, numatyti vertimo paslaugas yra kliento atsakomybė. • Nemėginkite atlikti įrangos techninės priežiūros, nebent atsižvelgėte į šį eksploataavimo vadovą ir jį supratote. • Jei neatkreipsite dėmesio į šį perspėjimą, galimi sužalojimai dėl elektros šoko, mechaninių ar kitų paslaugų tiekėjui, operatoriui ar pacientui.

Service Manual Language Information (cont'd.)

<p>ADVARSEL (NO)</p>	<p>Denne servicehåndboken finnes bare på engelsk.</p> <ul style="list-style-type: none"> • Hvis kundens serviceleverandør trenger et annet språk, er det kundens ansvar å sørge for oversettelse. • Ikke forsøk å reparere utstyret uten at denne servicehåndboken er lest og forstått. • Manglende hensyn til denne advarselen kan føre til at serviceleverandøren, operatøren eller pasienten skades på grunn av elektrisk støt, mekaniske eller andre farer.
<p>OSTRZEŻENIE (PL)</p>	<p>Niniejszy podręcznik serwisowy dostępny jest jedynie w języku angielskim.</p> <ul style="list-style-type: none"> • Jeśli dostawca usług klienta wymaga języka innego niż angielski, zapewnienie usługi tłumaczenia jest obowiązkiem klienta. • Nie należy serwisować wyposażenia bez zapoznania się i zrozumienia niniejszego podręcznika serwisowego. • Niezastosowanie się do tego ostrzeżenia może spowodować urazy dostawcy usług, operatora lub pacjenta w wyniku porażenia elektrycznego, zagrożenia mechanicznego bądź innego.
<p>AVISO (PT-BR)</p>	<p>Este manual de assistência técnica só se encontra disponível em inglês.</p> <ul style="list-style-type: none"> • Se o serviço de assistência técnica do cliente não for GE, e precisar de outro idioma, será da responsabilidade do cliente fornecer os serviços de tradução. • Não tente reparar o equipamento sem ter consultado e compreendido este manual de assistência técnica. • O não cumprimento deste aviso pode por em perigo a segurança do técnico, operador ou paciente devido a choques elétricos, mecânicos ou outros.
<p>AVISO (PT-PT)</p>	<p>Este manual técnico só se encontra disponível em inglês.</p> <ul style="list-style-type: none"> • Se a assistência técnica do cliente solicitar estes manuais noutra idioma, é da responsabilidade do cliente fornecer os serviços de tradução. • Não tente reparar o equipamento sem ter consultado e compreendido este manual técnico. • O não cumprimento deste aviso pode provocar lesões ao técnico, ao utilizador ou ao paciente devido a choques eléctricos, mecânicos ou outros.
<p>AVERTISMENT (RO)</p>	<p>Acest manual de service este disponibil numai în limba engleză.</p> <ul style="list-style-type: none"> • Dacă un furnizor de servicii pentru clienți necesită o altă limbă decât cea engleză, este de datoria clientului să furnizeze o traducere. • Nu încercați să reparați echipamentul decât ulterior consultării și înțelegerii acestui manual de service. • Ignorarea acestui avertisment ar putea duce la rănirea depanatorului, operatorului sau pacientului în urma pericolelor de electrocutare, mecanice sau de altă natură.
<p>ПРЕДУПРЕЖДЕНИЕ (RU)</p>	<p>Настоящее руководство по обслуживанию предлагается только на английском языке.</p> <ul style="list-style-type: none"> • Если сервисному персоналу клиента необходимо руководство не на английском, а на каком-то другом языке, клиенту следует обеспечить перевод самостоятельно. • Прежде чем приступать к обслуживанию оборудования, обязательно обратитесь к настоящему руководству и внимательно изучите изложенные в нем сведения. • Несоблюдение требований данного предупреждения может привести к тому, что специалисты по обслуживанию, операторы или пациенты получат удар электрическим током, механическую травму или другое повреждение.

Service Manual Language Information (cont'd.)

<p>UPOZORENJE (SR)</p>	<p>Ovo servisno uputstvo je dostupno samo na engleskom jeziku.</p> <ul style="list-style-type: none"> • Ako klijentov serviser zahteva neki drugi jezik, klijent je dužan da obezbedi prevodilačke usluge. • Ne pokušavajte da opravite uređaj ako niste pročitali i razumeli ovo servisno uputstvo. • Zanemarivanje ovog upozorenja može dovesti do povređivanja serviser, rukovaoca ili pacijenta usled strujnog udara, ili mehaničkih i drugih opasnosti.
<p>VAROVANIE (SK)</p>	<p>Tento návod na obsluhu je k dispozícii len v angličtine.</p> <ul style="list-style-type: none"> • Ak zákazníkov poskytovateľ služieb vyžaduje iný jazyk ako angličtinu, poskytnutie prekladateľských služieb je zodpovednosťou zákazníka. • Nepokúšajte sa o obsluhu zariadenia skôr, ako si neprečítate návod na obsluhu a neporozumiete mu. • Zanedbanie tohto varovania môže vyústiť do zranenia poskytovateľa služieb, obsluhujúcej osoby alebo pacienta elektrickým prúdom, mechanickým alebo iným nebezpečenstvom.
<p>OPOZORILO (SL)</p>	<p>Ta servisni priročnik je na voljo samo v angleškem jeziku.</p> <ul style="list-style-type: none"> • Če ponudnik storitve stranke potrebuje priročnik v drugem jeziku, mora stranka zagotoviti prevod. • Ne poskušajte servisirati opreme, če tega priročnika niste v celoti prebrali in razumeli. • Če tega opozorila ne upoštevate, se lahko zaradi električnega udara, mehanskih ali drugih nevarnosti poškoduje ponudnik storitev, operater ali bolnik.
<p>ADVERTENCIA (ES)</p>	<p>Este manual de servicio sólo existe en inglés.</p> <ul style="list-style-type: none"> • Si el encargado de mantenimiento de un cliente necesita un idioma que no sea el inglés, el cliente deberá encargarse de la traducción del manual. • No se deberá dar servicio técnico al equipo, sin haber consultado y comprendido este manual de servicio. • La no observancia del presente aviso puede dar lugar a que el proveedor de servicios, el operador o el paciente sufran lesiones provocadas por causas eléctricas, mecánicas o de otra naturaleza.
<p>VARNING (SV)</p>	<p>Den här servicehandboken finns bara tillgänglig på engelska.</p> <ul style="list-style-type: none"> • Om en kunds servicetekniker har behov av ett annat språk än engelska ansvarar kunden för att tillhandahålla översättningstjänster. • Försök inte utföra service på utrustningen om du inte har läst och förstår den här servicehandboken. • Om du inte tar hänsyn till den här varningen kan det resultera i skador på serviceteknikern, operatören eller patienten till följd av elektriska stötar, mekaniska faror eller andra faror.
<p>UYARI (TR)</p>	<p>Bu servis kılavuzunun sadece İngilizcesi mevcuttur.</p> <ul style="list-style-type: none"> • Eğer müşteri teknisyeni bu kılavuzu İngilizce dışında bir başka lisandan talep ederse, bunu tercüme ettirmek müşteriye düşer. • Servis kılavuzunu okuyup anlamadan ekipmanlara müdahale etmeyiniz. • Bu uyarıya uyulmaması, elektrik, mekanik veya diğer tehlikelerden dolayı teknisyen, operatör veya hastanın yaralanmasına yol açabilir.

Service Manual Language Information (cont'd.)

ЗАСТЕРЕЖЕННЯ (UK)	<p>Дане керівництво з сервісного обслуговування постачається виключно англійською мовою.</p> <ul style="list-style-type: none">• Якщо сервісний інженер потребує керівництво іншою мовою, користувач зобов'язаний забезпечити послуги перекладача.• Не намагайтеся здійснювати технічне обслуговування даного обладнання, якщо ви не читали, або не зрозуміли інформацію, надану в керівництві з сервісного обслуговування.• Недотримання цього застереження може призвести до травмування сервісного інженера, користувача даного обладнання або пацієнта внаслідок електричного шоку, механічного ушкодження або з інших причин невірної обслуговування обладнання.
CẢNH BÁO (VI)	<p>Tài Liệu Hướng Dẫn Sửa Chữa chỉ có bản tiếng Anh.</p> <ul style="list-style-type: none">• Nếu các đơn vị cung cấp dịch vụ cho khách hàng yêu cầu một ngôn ngữ nào khác tiếng Anh, thì khách hàng sẽ có trách nhiệm cung cấp các dịch vụ dịch thuật.• Không được sửa chữa thiết bị trừ khi đã tham khảo và hiểu Tài liệu Hướng dẫn Sửa chữa.• Không tuân thủ những cảnh báo này có thể dẫn đến các tổn thương cho người thực hiện sửa chữa, người vận hành hay bệnh nhân, do sốc điện, các rủi ro về cơ khí hay các rủi ro khác.

Contents

1	MUSE HL7 Interface	
	Additional Assistance.....	15
	HL7 Standard Background	15
	Theory of Operation	17
	Predefined CCG Sites.....	17
	Default Site Layout.....	18
	Interaction with the MUSE System.....	18
	ADT Interface.....	18
	ADT Query Interface	18
	Order Interface.....	19
	Result Interface	19
	Result Batch Interface	20
	Financial Interface	20
	Financial Batch Interface	20
	ADT, Order, and Result Data Storage.....	20
	Graphical Result Reporting Messages.....	20
	Depth of Merge	21
2	HL7 Inbound Implementation	
	General Description	23
	Introduction	23
	Low-level Communications.....	23
	Interface Data Content.....	23
	Transactions to the MUSE HL7 Interface.....	24
	MUSE System Incoming HL7 Message Configuration Options	24
	ADT Messages.....	25
	ADT Message Composition	26
	Order Message.....	27
	Order Message Composition	27
	Depth of Merge Implementation	28
	Site Configuration: Update Master MUSE Patient List	29
	Site Configuration: Update Unconfirmed Tests	29
	Site Configuration: Update Confirmed Tests for Merge Transactions Only	30
	Site Configuration: Update Full Patient Demographics from Merge Transactions	30
	Application High-Level Acknowledgment Messages.....	30
	Acknowledgment Message Composition	31
3	HL7 Outbound Implementation	

	General Description	33
	Low-Level Communications.....	33
	Interface Data Content.....	33
	Transactions From the MUSE HL7 Interface.....	34
	MUSE System Outgoing HL7 Message Configuration Options	35
	Batch Data Transfer	39
4	HL7 Query Implementation	
	Introduction	43
	Low-level Communications.....	43
	Interface Data Content	43
	Query Transactions of the MUSE HL7 Interface	44
	Query Transaction HL7 Messages.....	44
5	System Data Field Definitions	
	ADT Fields.....	47
	Order Fields.....	49
6	HL7 Data Segment Definitions	
	Inbound (to MUSE) Segments	51
	Outbound (from MUSE) Segments	65
7	HIS Data Management	
	Setup	81
	Scheduling HIS Data Maintenance.....	83
	Maintaining the Log and Queue.....	83
8	HL7 Implementation FAQs	
	Frequently Asked Questions	85
	ADT Fields and Functions	85
	Orders Fields and Functions.....	86
	Result and Financial Messages Fields and Functions.....	87
	Communication Protocol Options	88
9	HL7 Interface Testing	
	Introduction	91
	Test Goals.....	91
	Customer Prerequisites for Interface Testing	92

Test Procedures.....	93
Test Sequence	93
Test Templates	94
Testing ADT Interface Transactions	94
Testing Transactions that Add Patient Date	95
Testing Transactions that Change Patient Data	96
Testing Transactions that Merge Patient Data	97
Testing Transactions that Delete Patient Data	101
How to View Patient Admitting and Visit Information on the MUSE v9 System	102
Testing Order Transactions.....	104
How to View Patient Order Information on the MUSE System	106
Testing Result Transactions	108
Test Procedures.....	108
Test Data.....	109
Testing Results on MUSE Systems with Inbound HL7 ADT Interface Only	109
How to Send Test HL7 Results from the MUSE System (with Inbound HL7 ADT Interface)	111
Testing Results on MUSE System with Inbound HL7 ADT and Order Interfaces.....	115
How to Send Test HL7 Results from MUSE System (Inbound HL7 ADT and Order Interfaces).....	117
Testing Financial Transactions	121
Testing Financial Transactions on MUSE Systems	121
Testing Interface Transactions.....	122
Monitoring HL7 Transactions on MUSE System	122
MUSE HIS Event Log.....	122
MUSE HIS Change Log.....	124
A Abbreviations In Manual	
Abbreviation List.....	125
B OBX Code Tables	
OBX Observation Code Tables.....	129
C Waveform Processing Rules	

Encoding and Encryption	137
Decryption	138
D ADT Test Plan Templates	
Introduction	139
ADT Transactions for Adding Patient Data	140
A01 – Admit Patient	140
A04 – Register Outpatient	142
A04 – Register Emergency Patient	144
A10 – Patient Arriving	146
A13 – Cancel Patient Discharge	148
A05 – Pre-Admit Inpatient	150
A05 – Pre-Admit Outpatient	152
ADT Transactions for Changing Patient Data	155
A08 – Update Patient Information – Change Date of Birth	155
A08 – Update Patient Information – Change Race	156
A08 – Update Patient Information – Change Sex	156
A08 – Update Patient Information – Change Street Address	157
A08 – Update Patient Information – Change Patient Name	157
A08 – Update Admitting MD Name and HIS ID	158
A02 – Transfer Patient Location	159
A06 – Transfer Outpatient to Inpatient	159
A07 – Transfer Inpatient to Outpatient	160
A12 – Cancel Patient Transfer	161
A17 – Swap Patient Locations	161
A03 – Discharge Patient	162
A09 – Patient Departing	163
ADT Transactions for Deleting Patient Data	163
TA11 – Cancel Patient Admit	164
A23 – Delete Patient	164
E Order Test Plan Templates	
Introduction	167
New Orders	168
NW – New Order – EKG	168
NW – New Order – Signal Averaged	170
NW – New Order – Holter	171
NW – New Order – Stress	173
Change Orders	174
XO – Change Order – EKG	174
XO – Change Order – Signal Averaged	175
XO – Change Order – Holter	176
XO – Change Order – Stress	176
Order Priority	177
NW – Enter Order – EKG STAT Priority	177
NW – Enter Order – EKG Routine Priority	178
NW – Enter Order – EKG ASAP Priority	178
New EKG Orders with a Future Date	179

Multiple Occurrence EKG Order	179
Cancel EKG Order	180
Discontinue EKG Order.....	181

F Results Test Plan Templates

Introduction	183
---------------------------	------------

MUSE Preliminary Results on ADT Interface Only	184
Preliminary Results for EKG	184
Preliminary Results for HiRes	186
Preliminary Results for Holter	188
MUSE Preliminary Results for Stress	189

MUSE Demographic Complete Results on ADT Interface Only.....	191
Demographic Complete Results for EKG	191
MUSE Demographic Complete Results for HiRes	193
Demographic Complete Results for Holter	194
Demographic Complete Results for Stress.....	196

MUSE Final Results on ADT Interface Only	198
Final Result for EKG	198
Final Result for HiRes	199
Final Result for Holter.....	201
Final Result for Stress.....	203

MUSE Corrected Results on ADT Interface Only.....	204
Corrected Result for EKG	204
Corrected Result for HiRes	206
Corrected Result for Holter	208
Corrected Result for Stress	210

MUSE Preliminary Results on ADT and Orders Interface.....	212
Preliminary Results for EKG	212
Preliminary Results for HiRes.....	214
Preliminary Results for Holter	216
Preliminary Results for Stress	218

MUSE Demographic Complete Results on ADT and Orders Interface.....	220
Demographic Complete Results for EKG	220
Demographic Complete Results for HiRes	222
Demographic Complete Results for Holter	224
Demographic Complete Results for Stress.....	226

MUSE Final Results on ADT and Orders Interface	228
Final Results for EKG	228
Final Results for HiRes	230
Final Results for Holter	232
Final Results for Stress.....	234

MUSE Corrected Results on ADT and Orders Interfaces	236
Corrected Result for EKG	236
Corrected Result for HiRes.....	238
Corrected Result for Holter	240
Corrected Result for Stress	242

G Results and Financials Test Plan Templates

Introduction	245
MUSE Preliminary Results and Billing	246
Preliminary Results and Billing for EKG	246
Preliminary Results and Billing for HiRes	248
Preliminary Results and Billing for Holter	250
Preliminary Results and Billing for Stress.....	252
MUSE Demographic Complete Results and Billing	254
Demographic Complete Results and Billing for EKG	254
Demographic Complete Results and Billing for HiRes	256
Demographic Complete Results and Billing for Holter.....	258
Demographic Complete Results and Billing for Stress.....	260
MUSE Final Results and Billing	261
Final Results and Billing for EKG	261
Final Results and Billing for HiRes	263
Final Results and Billing for Holter.....	265
Final Results and Billing for Stress.....	267
MUSE Corrected Results and Billing	269
Corrected Results and Billing for EKG.....	269
Corrected Results and Billing for HiRes	271
Corrected Results and Billing for Holter	273
Corrected Results and Billing for Stress	275

1

MUSE HL7 Interface

The GE Healthcare system can be connected to a hospital information system by the Health Level Seven Standard Interface (HL7). This document is intended to be a technical reference for GE Healthcare customers implementing the HL7 interface. It contains data formats for the transmission of data and describes the requirements for interfacing to the GE Healthcare system using the HL7 standard. This document does not describe how transactions are processed by the GE Healthcare system, or the clinical impact of using some of the features described here.

This document is not intended to provide instructions for implementing and using the HL7 Standard. Details of the HL7 standard can be found in Health Level Seven Version 2.2 or later.

NOTE:

This document details all options within the GE HL7 interface. Not all of the features and functions described in this manual are included with a standard interface. The purchase of additional modules in conjunction with the GE HL7 Standard Interface may be required to obtain the desired functionality.

Additional Assistance

GE Healthcare maintains a trained staff of application and technical experts to answer questions and respond to issues and problems that may arise during the installation, maintenance, and use of this system.

Contact your local GE Healthcare representative to request additional assistance.

HL7 Standard Background

The Health Level Seven Standard (HL7) is used to exchange data between computer systems. It does not require a specific computer operating system, programming language, or communication protocol for its implementation.

The goal of the HL7 Standard is to standardize message content and usage, while allowing user-specific variations within the standard. To accomplish this, the HL7 Standard specifies encoding rules used to create the message format. Based on these rules, the messages generally consist of data fields and data segments.

A message is comprised of multiple segments. While some of the segments are required to create a message, others are optional. Each segment within the HL7 message is separated by special segment separator characters.

Each segment contains a number of data elements. The data elements may be of varying lengths. Like the segments, elements are separated from each other by special characters. A number of data elements and their separators are logically grouped together to create data segments such as the message header segment or the patient identification segment. With the exception of the segment separator characters, the data contained in HL7 messages consists of displayable ASCII characters.

Each segment begins with a three character value, for example "MSH" for the message header segment. These three characters uniquely identify the segment within a given message. Segments are identified as either required or optional, and some may be repeated. Similar to data fields, data segments are separated from each other by segment separator characters.

Based on the HL7 encoding rules, each message within the HL7 protocol has a known structure. The segments and data fields that comprise a given message are always the same, plus or minus the defined optional segments and data fields. As a result, an individual data field can be found within a message simply by knowing its configured position in a segment.

HL7 messages are passed between computer systems as parts of valid transactions. For example, admitting a patient on the Hospital Information System (HIS), or receiving a completed study result on the MUSE system would cause an HL7 message to be generated and sent. After a message is sent, the receiving system processes the message. When processing is complete, the receiving system can process the next message, or it can optionally generate an application-level acknowledgment that is returned to the sending system.

Since the HL7 Standard provides flexibility in message content and format, and in communication protocol options, its implementation requires mutual agreement between the sending and receiving computer systems on the following items:

- Message formats
- Acknowledgment protocol
- Communication protocol
- Data handling

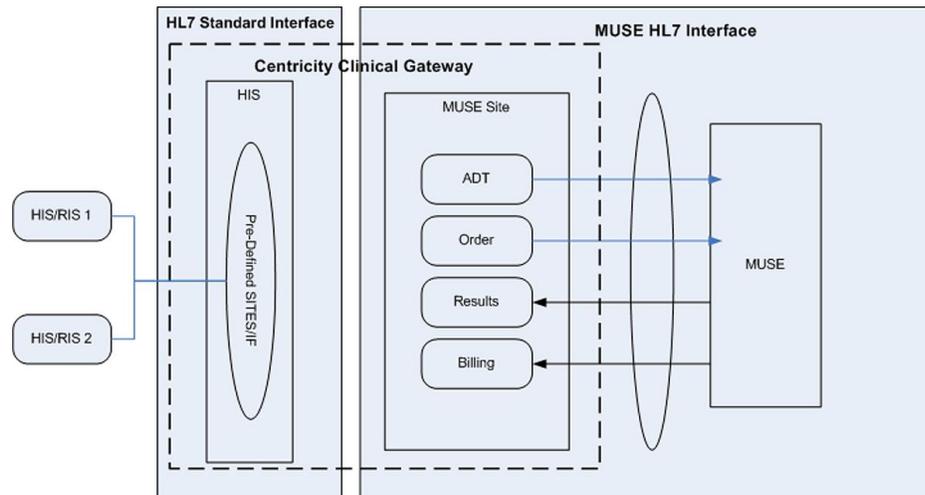
Communication between Hospital Information Systems personnel and MUSE Interface personnel is essential to determine the customer-specific use of the HL7 Standard.

NOTE:

This document is not intended to provide instructions for implementing and using the HL7 Standard. Details of the HL7 standard can be found at <http://www.hl7.org/>.

Theory of Operation

The following diagram depicts a typical production deployment environment for the HL7 Standard Interface and the MUSE file server. CCG (Centricity Clinical Gateway) is the HL7 interface engine.



The MUSE HL7 Interface is defined as the combination of HL7 parsers on the MUSE Server and configured MUSE-specific CCG Sites on the CCG Server, that allow MUSE to communicate with an external system via HL7.

CCG receives the inbound ADT and Order (ORM) messages from external systems (DIS/RIS/HIS) and routes them to the MUSE Server. It also routes the outbound Results (ORU) and Billing (DFT) messages from the MUSE file server to external systems. CCG also processes ADT Query messages which MUSE may use to request ADT data from external systems.

The data exchange between CCG and MUSE file server is done using TCP/IP socket-based communication protocol. A pre-defined HL7 message format is used to route data between CCG and MUSE server.

Predefined CCG Sites

The MUSE system ships with three pre-defined interfaces:

- muse_prod
- batch_muse
- batch_his

NOTE:

his_prod currently ships with CCG.

These sites include the necessary threads and configurations to receive and route messages between the MUSE file server and external systems (DIS/RIS/HIS).

Your HL7 engineer will configure the pre-defined interface to meet the needs of your hospital systems, so your configuration may not resemble this default layout exactly as presented.

Default Site Layout

The MUSE HL7 Interface is designed to meet the goals of the HL7 Standard. It provides the flexibility to easily support user-specific differences in the HL7 message formats, and also supports a variety of communication protocols for the exchange of messages.

The MUSE HL7 Interface supports only the HL7 Standard message types that have an equivalent function on the MUSE system. Message types which do not have an equivalent function on the MUSE system are not supported.

The MUSE system supports immediate processing rules for all message types. Outbound batch transactions (deferred processing) are supported for result and financial messages.

Interaction with the MUSE System

The MUSE HL7 Interface consists of seven standard component interfaces:

- ADT (Admit/Discharge/Transfer)
- ADT Query
- Order
- Result
- Result Batch
- Financial
- Financial Batch

Each interface component is a purchasable option. The complete interface may include one or any combination of these components. However, an ADT interface is required with an Order interface. We also highly recommend that an Order interface be included with every Financial interface.

NOTE:

The implementation of one or more of the interfaces will affect the operations of the respective department(s) and its personnel. Changes will affect how patient information is entered and/or how billing is completed.

ADT Interface

The MUSE HL7 Interface accepts unsolicited messages for ADT transactions from the host system. The MUSE HL7 Interface can respond with an application-level acknowledgment if required by the host system. This acknowledgment indicates that the message was received. Once the messages are forwarded to and processed on the MUSE system, entries are made in the MUSE ADT databases and MUSE system users can then access the data.

NOTE:

The MUSE HL7 interface does not support batch processing of ADT messages.

ADT Query Interface

The MUSE HL7 Interface has the ability to query the host system for Patient Demographics based on the MUSE system user actions, or the MUSE system events.

The messages returned by the host system are entered into the MUSE ADT database and MUSE system users can then access the data.

The ADT Query feature is for customers who cannot send Unsolicited Admit messages (ADT messages) to the MUSE system to populate Patient Information in the ADT Database. Instead the MUSE system sends a Query Message to the HIS, providing the least Patient Information (PatientID or Patient Last Name) asking for Patient Demographics and with the Query response received from HIS, MUSE adds/updates Patient Details in the ADT Database.

There are three triggers in the MUSE system for ADT Query:

- Editor
- Normalization
- Device

ADT Query, if configured for these tasks, will send a query message out to the configured port on the CCG system, receives the response from the HIS system, and performs update operations on the MUSE system.

Order Interface

The MUSE HL7 Interface receives and processes real-time order transaction messages from the host system. The order message must contain an order for only one study. The MUSE HL7 Interface can respond with an application-level acknowledgment if required by the host system. This acknowledgment indicates that the message was received. Once the messages are forwarded to and processed on the MUSE system, entries are made in the MUSE ADT databases and the MUSE system users can then access the data.

NOTE:

The MUSE HL7 interface does not support batch processing of order messages. The MUSE order interface cannot be configured to query the host system for orders, nor does it create order numbers.

Result Interface

The MUSE HL7 Interface can deliver result messages to the host system. The messages can be configured to be sent:

- as the study is acquired by the MUSE system
- as the study is confirmed
- as all patient demographics are confirmed

If necessary, confirmed messages can be regenerated and resent to the host by a user. However, unconfirmed messages may have been updated, and thus may not be regenerated exactly as they were initially acquired.

The HIS can use the result messages in either of the following ways:

- To make study results available for access on the hospital computer system.
- To generate charges for completed studies.

The MUSE HL7 interface does not send formatted text and does not support HL7 DSP segments.

Result Batch Interface

The MUSE HL7 Interface can deliver batches of result messages, allowing the MUSE system user to create a schedule based on daily, weekly, and/or monthly intervals at which time the collected batch of messages will be sent.

Financial Interface

The MUSE HL7 Interface can be configured to send separate financial messages to the host system. The messages can be configured to be sent:

- as the study is acquired by the MUSE system,
- as the study is confirmed
- as all patient demographics are confirmed

If necessary, messages can be regenerated and resent to the host by a user. However, study data may have been updated in the interim, and thus the messages may not be regenerated exactly as they were initially sent.

The HIS can use the financial messages in either of the following ways:

- To generate professional fee charges for completed studies.
- To generate technical fee charges for completed studies.

Financial Batch Interface

The MUSE HL7 Interface can deliver batches of financial messages, allowing the MUSE system user to create a schedule based on daily, weekly, and/or monthly intervals at which time the collected batch of messages will be sent.

ADT, Order, and Result Data Storage

The ADT and order data is stored on the MUSE system in three interface tables: patients, order, and visit. These short-term interface tables are maintained on the MUSE system for a configured length of time.

The study result data is stored on the MUSE system, separate from the interface tables. The study result data is first acquired into the MUSE system as unconfirmed data and stored on the edit list until they are confirmed. The confirmed studies are stored long-term in the patient's study database on the MUSE system.

As a study is acquired into the MUSE system, information from the interface tables is incorporated into the unconfirmed study data. While the study remains unconfirmed on the edit list, the interface information may be updated and the study data may be edited. Once the study is confirmed to the patient's study database, the information in the study (including interface data) does not change unless the system is configured for depth of merge for confirmed studies.

Graphical Result Reporting Messages

The MUSE HL7 interface supports reporting of both digitized waveform images and waveform data points in an HL7 result message.

MUSE has defined a Z-segment to support graphical results in several image formats. The supported formats for graphical result data include Adobe Portable Document Format (PDF), Postscript Level 2, TIFF fax image, PCL-5, and Windows 16-bit metafile

formats. All image types except Postscript are sent in the HL7 message either UUencoded or Base64 encoded.

The waveform data point options follows the HL7 standard for waveforms. Only the 12-lead resting ECG data type is supported when generating HL7 messages that include the detailed waveform data points.

Depth of Merge

The MUSE system can be configured to allow patient study demographics and visit/account information stored on the MUSE to be automatically synchronized with the HIS system when specific HL7 messages are received. This data synchronization may be configured to operate on both confirmed and unconfirmed study data as well as the MUSE site level patient demographics data store. The following site level settings are available to control the behavior of depth of merge:

- **Update Master MUSE Patient List** – All depth of merge HL7 messages will update the MUSE site level demographics data. This setting is not recommended. The Master Patient List is not used on systems that have an ADT interface.
- **Update Unconfirmed Tests** – All HL7 messages will update unconfirmed patient tests.
- **Update Confirmed Tests for Merge Transactions Only** – Merge specific HL7 message will update confirmed patient tests.
- **Update Full Patient Demographics Information From Merge Transactions** – Update all fields (if not checked only Patient ID, Last Name, First Name, and Date of Birth are updated).

Merge specific HL7 message are those that change Patient ID, Visit and/or Account identifiers to the correct values. These are currently the only type of messages that target confirmed patient test data.

2

HL7 Inbound Implementation

General Description

Introduction

The HL7 Standard Interface is used to connect a hospital's information system (HIS) to the MUSE HL7 Interface to exchange data. The MUSE HL7 Interface supports inbound ADT and Order data. The inbound data is unsolicited, and is processed in real-time.

The MUSE HL7 Interface does not support inbound batch messages.

Low-level Communications

The specific installation determines which low-level communication protocol is used. The HL7 interface standard is designed to accommodate a wide variety of communication methodologies, from message-based communications to file transfer schemes.

Implementation of the low-level communication protocol does not directly affect the HL7 interface message content and functionality. Not all low-level communication protocols support high-level acknowledgments. Therefore, if high-level acknowledgments are desired, a low-level protocol that supports them must be selected.

The HL7 interface assumes that the low-level communication protocol ensures that the data arrives error-free. As a result, no data integrity checking is done at the application level. The MUSE HL7 interface allows only TCP/IP socket communication for receiving inbound HL7 transactions.

Interface Data Content

For HL7 ADT and order messages, data fields are mapped to the MUSE system data fields according to the configured position in the HL7 segment structures. The MUSE HL7 Interface Configuration programs define the mapping.

The configuration programs use data tables and simple scripting to determine how to process incoming HL7 messages. The configuration programs match the HL7 fields and functions specified by a customer to the MUSE data fields.

The following pages provide the general format of the various HL7 data messages recognized by the MUSE system for inbound interfaces. This document describes only

the data fields and segments that are required or used by the MUSE system. Fields and segments not listed here will be ignored by the MUSE system, unless optionally configured with a customized setup. Some customers may incorporate a special Z segment in the HL7 message format. The MUSE system may support the information contained in the Z segment, as determined on a case by case basis. The MUSE HL7 Interface is capable of parsing information in a special segment as long as the information corresponds to the MUSE system database information.

NOTE:

The MUSE system message processing follows the HL7 immediate processing rules. It does not support deferred processing.

Transactions to the MUSE HL7 Interface

The HIS sends ADT and/or order messages to the MUSE HL7 Interface. Once the messages enter the MUSE system, a task parses the message data and creates or alters entries in the MUSE database. MUSE system users may then view the information. An inbound interface may consist of ADT only, or ADT and orders.

The HL7 ADT transactions transmit patient demographic and patient visit information from the hospital's ADT system to the MUSE system. New or updated patient information is entered into the hospital's ADT system and sent to the MUSE system as an unsolicited transaction. MUSE system users can then view the patient information received from the HIS. The MUSE system will not accept batch ADT messages.

The order entry transactions transfer the order information for a requested study from a hospital's order entry system to the MUSE system. All orders originate on the host system and are sent to the MUSE system as unsolicited transactions.

NOTE:

The MUSE HL7 Interface does not originate orders, create order numbers, query for orders, cancel orders to the HIS, or accept batch order messages.

In HL7 terminology, the MUSE HL7 Interface is considered a "filler" of orders. It receives orders from the hospital's order entry system, allows users to view the order information, and tracks order status as studies are completed on the MUSE system.

MUSE System Incoming HL7 Message Configuration Options

The MUSE HL7 Interface maps incoming HL7 ADT and order message segment data fields to corresponding HL7 messages recognized by MUSE. In turn, MUSE parses the known messages and updates its database as needed. The mapping is based on known message configurations, and is done in CCG using data mapping tables. The flexibility provided by these tables allows the MUSE HL7 Interface to accommodate differences between systems in HL7 ADT and order message implementations.

Not all HL7 data fields are supported by the MUSE HL7 Interface. The HL7 segments and data fields supported by the MUSE HL7 Interface are tabulated in "[System Data Field Definitions](#)" on page 47 and "[HL7 Data Segment Definitions](#)" on page 51 .

The following sections describe MUSE data mapping tables and message configurations for inbound interfaces

ADT Messages

The following HL7 event types are supported by the MUSE HL7 Interface for ADT messages:

ADT Messages

HL7 event	MUSE function	MUSE Action
A01	Admit patient	Patient is admitted. Patient and open visit are created in MUSE ADT tables.
A02	Transfer patient	Patient visit location is changed
A03	Discharge patient	Patient visit ends. Visit status is changed to closed
A04	Admit patient	Patient is admitted. Patient and open visit are created in MUSE ADT tables.
A05	Admit patient	Patient is admitted. Patient and open visit are created in MUSE ADT tables.
A06	Transfer outpatient to inpatient	Patient location and type are changed for visit
A07	Transfer inpatient to outpatient	Patient location and type are changed for visit
A08	Update patient information	Patient and visit information are updated
A09	Discharge patient	Patient visit ends. Visit status is changed to closed
A10	Admit patient	Patient is admitted. Patient and open visit are created in MUSE ADT tables.
A11	Cancel admit	Patient visit is deleted if visit does not have active orders
A12	Transfer patient	Patient visit location is changed
A13	Cancel discharge	Visit status is changed to Open
A17	Swap patients	Two patient Visit locations are swapped
A18	Merge patient ID	Visits and orders associated with one PID are moved to a different PID
A19	Update patient information	Patient query (ADT query) results
A23	Delete patient	Patient visit is deleted if visit does not have active orders
A34	Merge patient ID	Visits and orders associated with one PID are moved to a different PID
A35	Merge account	Updates account number with new account number

ADT Messages (cont'd.)

HL7 event	MUSE function	MUSE Action
A36	Merge patient ID and account	Patient ID and account number are updated with new Patient ID and account number
A42	Merge visit	The visit and all associated orders are moved to new visit number
A46	Merge visit	The visit and all associated orders are moved to new visit number

NOTE:

A18 functionality is reserved for backwards compatibility. A34 should be used.

All other HL7 messages are unsupported and will not be processed by the MUSE HL7 interface application. When an unsupported HL7 message is sent to the MUSE interface, an error is logged.

NOTE:

In order to maximize performance, unsupported messages should be filtered out by the HIS system.

ADT Message Composition

The general format for the various ADT messages is given below. Segments enclosed by square brackets, [], are optional. The MUSE HL7 Interface allows only one Patient Identification Segment per HL7 message, with the exception of the A17 Swap transaction. A tabulation of all the HL7 segments and data fields as supported by the MUSE HL7 Interface is included in [“System Data Field Definitions” on page 47](#) and [“HL7 Data Segment Definitions” on page 51](#).

The MUSE HL7 interface supports the following HL7 ADT message segments. MUSE HL7 Interface message configuration allows the use of additional standard HL7 segments, or special Z-segments, for specific data that is supported on the MUSE system. HL7 segments not listed below, or that are not configured in the MUSE HL7 Interface are ignored by the MUSE HL7 Interface when received in an HL7 ADT message. The MUSE HL7 Interface supports fields for patient height, patient weight, and admitting diagnosis which do not directly correlate with fields defined by HL7 ADT messages.

ADT Common Trigger Events A01, A02, A03, A04, A05, A06, A07, A08, A09, A10, A11, A12, A13, A23

- MSH-Message Header segment
- EVN-Event Type segment
- PID-Patient Identification segment
- PV1-Patient Visit segment
- [DG1] - Patient diagnosis segment
- [NTE] - Note segment
- {[OBX]}- Observation segment
- [ZEX] - Extra data fields

ADT Merge A18, A34, A35, A36, A42, A46

- MSH-Message Header segment
- EVN-Event Type segment
- PID-Patient Identification segment
- PV1-Patient Visit segment
- MRG-Merge Information segment

ADT Swap A17

- MSH-Message Header segment
- EVN-Event Type segment
- PID-Patient 1 Identification segment (with sequence number 1, required)
- PV1-Patient 1 Visit segment (with sequence number 1, required)
- PID-Patient 2 Identification segment (with sequence number 2, required)
- PV1-Patient 2 Visit segment (with sequence number 2, required)

Order Message

The following HL7 order functions are supported by the MUSE HL7 Interface:

Order Functions

Order	Description
NW New Order	A new order is created.
CA Cancel Order Request	An existing order is cancelled if not already in process in MUSE.
OD Delete Order	An existing order is cancelled.
XO Change Order Request	An existing order is changed. If order did not previously exist in MUSE, new order is created.

All other order functions are unsupported and will be rejected by the MUSE HL7 interface application.

NOTE:

In order to maximize performance, unsupported order functions should be "filtered out" so they do not transmit to the MUSE interface.

Order Message Composition

The general format of an order message is given below. Segments enclosed in square brackets, [], are optional. The MUSE HL7 Interface allows only one common order segment and one Observation Request segment per message (only one order is allowed per HL7 order message). A tabulation of all the HL7 segments and data fields supported by the MUSE HL7 Interface is included in ["System Data Field Definitions" on page 47](#) and ["HL7 Data Segment Definitions" on page 51](#).

In general, these are the only HL7 order message segments supported by the MUSE HL7 Interface. MUSE HL7 Interface message configuration may allow the use of

additional standard HL7 segments, or special Z-segments, for specific data that is supported on the MUSE system. HL7 segments not listed below or not set up in the MUSE HL7 Interface configuration program are ignored by the MUSE HL7 Interface when received in a HL7 order message.

Although the PV1 segment is shown as an optional segment in the HL7 order message, the MUSE system supports fields which may store information in the MUSE databases specifically from the order messages PV1 segment. The MUSE HL7 Interface also supports fields for ordering comments which do not directly correlate with fields defined by HL7 ORM messages.

- MSH-Message Header segment
- PID-Patient Identification segment
- [PV1]-Patient Visit segment
- ORC-Common Order segment
- OBR-Observation Request segment
- [NTE] - Note segment
- [DG1] - Patient diagnosis segment
- {[OBX]}- Observation segment
- [ZEX] - Extra data fields

Depth of Merge Implementation

The types of HL7 messages, along with the MUSE site configuration setting that will trigger automatic updates to patient study data stored on the MUSE system are provided in the following sections:

- [“Site Configuration: Update Master MUSE Patient List” on page 29](#)
- [“Site Configuration: Update Unconfirmed Tests” on page 29](#)
- [“Site Configuration: Update Confirmed Tests for Merge Transactions Only” on page 30](#)
- [“Site Configuration: Update Full Patient Demographics from Merge Transactions” on page 30](#)

It should be noted that if a study which is the target for an update or merge is checked out for editing at the time the transaction is sent to the MUSE system the study will be left un-merged.

Site Configuration: Update Master MUSE Patient List

The following messages will cause the MUSE site level patient demographics data to be updated for the specified patient:

NOTE:

Update Master MUSE Patient List should be enabled only when the workflow requires that the current site level patient demographics on the MUSE is always in synchronization with the HIS system. Since all A08 messages will trigger an update to the site level demographics when the patient is present, and since A08 messages are very common, this may place an unnecessary load on the system. The site level demographics will be updated as a consequence of unconfirmed records being updated, it is generally recommended that this check box be disabled.

Message Events

MUSE Function	HL7 Event
Admit Patient	ADT [A01, A04, A05, A10]
Update Patient	ADT [A08]
Transfer Patient	ADT [A12, A02]
Merge PID	ADT [A18, A34]
Merge Account	ADT [A35]
Merge PID & Account	ADT [A36]
Merge Visit	ADT [A42, A46]

Site Configuration: Update Unconfirmed Tests

The following messages will cause unconfirmed studies to be updated for the specified patient:

NOTE:

PID/Name and Date of Birth mismatches will prohibit the update of unconfirmed studies.

Message Events:

MUSE Function	HL7 Event
Admit Patient	ADT [A01, A04, A05, A10]
Update Patient	ADT [A08]
Transfer Patient	ADT [A12, A02]
Update Patient Status	ADT [A07, A06]
Update Order	ORM [XO], if order status = unconfirmed
Merge PID	ADT [A18, A34]
Merge Account	ADT [A35]

Message Events: (cont'd.)

MUSE Function	HL7 Event
Merge PID & Account	ADT [A36]
Merge Visit	ADT [A42, A46]

Site Configuration: Update Confirmed Tests for Merge Transactions Only

The following messages will cause confirmed studies to be updated for the specified patient:

Message Events:

MUSE Function	HL7 Event
Merge PID	ADT [A18, A34]
Merge Account	ADT [A35]
Merge PID & Account	ADT [A36]
Merge Visit	ADT [A42, A46]

Site Configuration: Update Full Patient Demographics from Merge Transactions

The following messages will cause all fields of the confirmed studies to be updated for the specified patient:

NOTE:

If not checked only Patient ID, Last Name, First Name, and Date of Birth are updated.

MESSAGE EVENTS:**MUSE Function HL7 Event**

Merge PID ADT [A18, A34]

Merge Account ADT [A35]

Merge PID & Account ADT [A36]

Merge Visit [A42, A46]

Application High-Level Acknowledgment Messages

The MUSE HL7 Interface supports application-level message acknowledgments in response to inbound messages formatted as HL7 original mode acknowledgments. This function allows an application to acknowledge that it has received data and has determined the message is valid HL7. The acknowledgment message returned to the

sending application is used to determine whether to initiate a re-send of the message, to abort the transaction or to continue processing the next transaction.

By default, the MUSE HL7 Interface will always send an HL7 acknowledgment message to the host system after receiving an ADT or order message.

The MUSE interface does not support single character or ACK/NACK acknowledgment responses.

Acknowledgment Message Composition

Acknowledgment messages contain the following HL7 interface segments:

- MSH-Message Header
- MSA-Message Acknowledgment

HL7 acknowledgment messages may contain one of three statuses from the receiving system: accept (AA), application error (AE), or application reject (AR). According to the HL7 specification, AE messages contain an error and are not to be retransmitted. AR messages may be retransmitted based on a local agreement between all parties involved in the interface implementation.

The MUSE HL7 Interface is not capable of detecting application-level errors. Because of this, it is capable only of responding with an AA or AE acknowledgment. It will respond with an AE acknowledgment when the HL7 message itself is corrupt or incomplete.

The MUSE HL7 Interface returns the ADT or order message MSH segment **Control ID** field as sent by the HIS in the MSA segment of the acknowledgment response.

3

HL7 Outbound Implementation

General Description

The HL7 Standard Interface is used to connect a hospital's information system (HIS) to the MUSE HL7 Interface for the exchange of data. Using the MUSE HL7 interface, the MUSE system can send result and financial messages to the HIS.

The MUSE HL7 Interface may be configured to provide result and/or financial messages. The MUSE HL7 Interface can be configured to format textual test results and/or financial files and transmit them to the HIS. Credits cannot be generated with the financial message interface. Result and financial messages can be configured to be sent as individual messages or in batches.

One or any combination of the result or financial functions may be implemented.

NOTE:

A financial interface is only recommended with an established ADT or order interface which ensures patient data matches the host computer system data.

Low-Level Communications

The specific installation determines which low-level communication protocol will be used. The HL7 interface standard is designed to accommodate a wide variety of communication methodologies, from message-based communications to file transfer schemes. Because of this flexibility, implementation of the low-level communication protocol does not directly affect the HL7 interface message content and functionality. However, not all low-level communication protocols support high-level acknowledgments. If high-level acknowledgments are desired, select a low-level protocol that supports them.

The HL7 interface assumes that the low-level communication protocol ensures that the data arrives error-free. As a result, no data integrity checking is done at the application level. Examples of possible communication methods are: ftp, TCP/IP, sockets and shared drives.

Interface Data Content

For HL7 outbound messages, the study data gathered from the MUSE system is mapped to the configured data field positions in the HL7 segment structures to create result and/or financial messages. Data mapping is accomplished through the MUSE HL7 Interface configuration programs (CCG).

The configuration programs use data tables and scripting to format outgoing HL7 messages. The configuration programs provide the flexibility to match the HL7 fields and functions specified by a customer to the MUSE data fields.

The following pages provide the general format of the various HL7 data messages recognized by the MUSE system for outbound interfaces. This document describes only the data fields and segments that are provided by the MUSE system. Fields and segments not listed here are not sent by the MUSE system.

NOTE:

The implementation of one or more of the interfaces will affect the operations of the respective department(s) and its personnel. Changes will affect how patient information is entered and/or how billing is completed.

Transactions From the MUSE HL7 Interface

The MUSE system manages and stores patient studies such as resting ECGs, Holters, and exercise stress studies. Initially, the studies are performed on ancillary MUSE devices and the study results are then acquired into the MUSE system for processing. At acquisition, the studies are generally unconfirmed with a status of preliminary which means that the results have not been interpreted or read by a physician. When a study is interpreted or read by a physician and confirmed, the status of the report updates to final. The stored results can be retrieved and/or edited as necessary. Tests that are re-edited and saved are in corrected/revised status.

The MUSE Report Distribution setup utility is used to configure the generation of result and financial messages to the MUSE interface engine and then to the HIS. As with other report distribution configurations, each MUSE study type has its own configuration. The report distribution configurable parameters within each study type are:

- Patient/study location parameter — The setup of the location parameter for HL7 messaging conforms to the same rules as other reports or devices. Refer to the *MUSE Cardiology Information System Operator's Manual* for detailed configuration.
- Triggers for generation of message — The available triggers for generation of an HL7 message are the same as those for reports to devices. Setting up an HL7 result in the unconfirmed section of the Report Distribution utility generates an HL7 message on acquisition of the study from the ancillary device to the MUSE server. Entries in the Demographics Complete section are executed when the study is marked as "Demographics Complete." Entries in the confirmed section are generated when the study is confirmed and when the study is revised and re-confirmed. If the format is "HIS billing," the HL7 message is generated only once for each trigger, even if the action to trigger another message is executed. Special user privileges are required to generate additional billing messages.
- Device — A communication device is created and used to transmit the HL7 message formatted by the MUSE system to the MUSE interface engine. Multiple HL7 devices may have been created for transmitting different message types. When configuring report distribution to send HL7 result and financial messages to the HIS, it is necessary to choose the correct device. The HL7 integration engineer who configured the MUSE HL7 interface will communicate the correct device to use.
- Message formats — Message formats are configured by the HL7 integration engineer and can include text messages, results messages with encoded waveforms, and messages formatted for billing. The message format selected in report distribution that is sent to the MUSE HL7 interface engine may be associated

with the HL7 device, or be a stand-alone format. The HL7 integration engineer who configured the system will communicate the correct format to select.

Additional notes on generation of Financial messages:

The MUSE system is configured to recognize when a user performs an action that would generate a second financial message and will either allow or suppress the message. When an event that could generate a duplicate message occurs (user triggers a Report Distribution route for Demographics Complete or confirms a study and the route is configured for billing), MUSE will evaluate the MUSE user's privilege to determine if they have sufficient privileges to bill a study more than once. If the user has this privilege they will be prompted to confirm that they wish to send another financial transaction for the study. If the user does not have re-bill privileges, MUSE will suppress the generation of the additional financial message, even if the Report Distribution settings are configured to route on this event.

Due to the potential that duplicate messages may be sent from MUSE the receiving HIS system must handle duplicate financial messages. Ultimately it is the responsibility of the HIS billing system to ensure proper charges and credits.

NOTE:

Use of financial messages based on newly acquired studies is not recommended.

MUSE System Outgoing HL7 Message Configuration Options

Outbound Message Statuses

The following is a description of the HL7 message statuses that are used by the MUSE HL7 interface for Outbound (ORU and DFT) messages.

- **Preliminary Result Status** This status indicates a study has been performed and acquired by the MUSE system. The message contains ADT and/or order information as entered at or available at the device. It may include a combination of preliminary study measurements and/or computer generated diagnosis statements. The preliminary status is indicated by the "P" in OBR-25 and in field 11 of each OBX segment.

NOTE:

Sending financial messages based on newly acquired studies is not recommended.

- **Demographics Complete Status** This status indicates that the patient demographics information in the MUSE system for a particular study is complete. This interim status can also be triggered manually by a MUSE user. The message contains ADT and/or order information as updated at the MUSE system. It may include a combination of preliminary study measurements and/or computer generated diagnosis statements. Sending a result message when a study reaches Demographics Complete status may be a better choice than sending a Preliminary Result or Billing Message, as it gives the MUSE users a chance to complete any missing patient information from the study before sending the message. The demographics complete status is indicated by the "I" in OBR-25 and in field 11 of each OBX segment.
- **Final Result Status** This status indicates a study has been edited at the MUSE system, and the study results have been confirmed by an overreader. The message contains ADT and/or order information as updated during the editing session. It may include a combination of confirmed study measurements and/or diagnosis

statements. The final status is indicated by the “F” in OBR-25 and in field 11 of each OBX statement.

- **Corrected Result Status** A status with corrected status indicates that a previously confirmed study has been re-edited and re-confirmed after the initial confirmation. The message contains ADT and/or order information as updated during the editing session. It may include a combination of confirmed study measurements and/or diagnosis statements. The corrected status is indicated by the “C” in OBR-25 and in field 11 of each OBX statement.

Result reporting from a MUSE system that does not include an order interface is possible. This type of interface will not include all of the data found in the following examples. Without an order interface, the order number may not be available on the MUSE system to include in the result or financial messages. Other information, such as the ordering physician, may also not be available. Please refer to the tables in the Data Segment section at the end of this document for details on the data contained in the MUSE system order table.

Study Result Message Composition (ORU)

All study result messages have the same basic segments:

- MSH - Message header
- PID - Patient identification
- PV1 - Patient visit
- [OBR] - Observation request
- {OBX} - Observation result
- [ZRI] - Report image (for waveform segment only)

OBX Segments

The OBX segments can repeat and will contain measurements, a single (non-coded diagnosis) line, the MUSE Enterprise Integration URL, or a specially formatted measurement and diagnosis statement. An ORU message can be configured to include specific measurement segments and various combinations of the URL and diagnosis segments.

Below are examples of each type of OBX segment and commonly used combinations of the segments.

OBX Discrete Measurement data segments (1 to n)

Each MUSE data type has a different set of reportable measurements that can be sent in a results ORU message. Using the OBX discrete measurement option, the ORU message can be configured to contain only the specific measurements requested by the EMR/HIS. Discrete OBX measurements are frequently sent along with the Non-coded, single-line diagnosis OBX segment (described below). See tables in “OBX Code Tables” on page 129 for available measurement elements and their corresponding codes for each MUSE test type.

Sample OBX segments with discrete measurements from a 12 Lead ECG:

```
OBX|1|ST|552^Ventricular Rate||140|BPM||||F
OBX|2|ST|553^Atrial Rate||140|BPM||||F
OBX|3|ST|554^P-R Interval||120|ms||||F
OBX|4|ST|555^QRS Duration||92|ms||||F
OBX|5|ST|556^Q-T Interval||272|ms||||F
```

```

OBX|6|ST|557^QTC Calculation (Bezeta) ||415|ms||||F
OBX|7|ST|558^P Axis||73|degrees||||F
OBX|8|ST|559^R Axis||66|degrees||||F
OBX|9|ST|560^T Axis||55|degrees||||F

```

OBX Non-coded diagnosis segment (single line with OBX-5 field repetitions) (1)

MUSE study diagnosis and interpretations are entered on MUSE studies as individual statements, groupings of statements, or as free text. Statements from the MUSE statement library are entered singularly or in groups on individual lines in the interpretation and diagnosis window in the MUSE application. These individual lines can be sent from the MUSE application in a single OBX segment, with each line separated by the message repetition separator.

The single line diagnosis statement is commonly used with a selection of measurement OBX segments.

Sample single-line OBX interpretation and diagnosis statement:

```

OBX|11|TX|208.0^Diagnosis||Sinus tachycardia~Acute
pericarditis~Nonspecific T wave abnormality~Abnormal
ECG~Confirmed by Wenzel, Mark A. (201) on 6/29/2010
10:28:30 AM||||F

```

OBX Measurement and Diagnosis segment (1)

Another option for Measurement and Diagnosis reporting is to use the pre-configured single OBX segment. This segment includes a pre-defined set of measurements and the interpretation diagnosis statements in a single minimally formatted field. This option also uses repeating fields in OBX-5 using the message repetition separator to create line breaks.

Sample combined Measurement and diagnosis segment:

```

OBX|1|FT|ECGMEASANDDIAG^||Test Reason : Chest Pain ~Blood
Pressure : 120/085 mmHG~Vent. Rate : 140 BPM Atrial Rate
: 140 BPM~ P-R Int : 120 ms QRS Dur : 092 ms~ QT Int :
272 ms P-R-T Axes : 073 066 055 degrees~ QTc Int : 415
ms~~Sinus tachycardia~Acute pericarditis~Nonspecific T wave
abnormality~Abnormal ECG~ Confirmed by Wenzel, Mark A. (201)
on 6/29/2010 10:28:30 AM~~Referred By: Holman, Robert G.
Overread By: Wenzel, Mark A.|||||F

```

When an ECG result is displayed in an EMR in true-type font, the Measurement and Diagnosis data will display similarly to the layout of the data on the actual ECG from the GE Healthcare ECG acquisition device as shown below:

```

Test Reason : Chest Pain
Blood Pressure : 120/085 mmHG
Vent. Rate : 140 BPM      Atrial Rate : 140 BPM
  P-R Int : 120 ms        QRS Dur : 092 ms
  QT Int : 272 ms         P-R-T Axes : 073 066 055 degrees
  QTc Int : 415 ms

```

```

Sinus tachycardia
Acute pericarditis
Nonspecific T wave abnormality
Abnormal ECG

```

Confirmed by Wenzel, Mark A. (201) on 6/29/2010 10:28:30 AM

```

Referred By: Holman, Robert G.           Overread By:
Wenzel, Mark A.

```

OBX URL segment (1)

A URL compatible with the MUSE Enterprise Integration application can also be sent in an OBX segment. This URL can then be stored with the study data in the EMR and launched from compatible EMRs to show the study image in PDF format. Purchase of one of the web-based MUSE Enterprise Integration applications is required in order to view the image launched with the URL. Check with your EMR vendor for the ability to integrate with MUSE using a URL web launch.

Sample OBX segment with URL:

```

OBX|10|RP|MUSEWebURL^||http://MUSETEST/musescripts/museweb.
dll%3FRetrieveTestByDate%3FPatientID=0002749255%26Date=
28-06-2010%26Time=15%3a32%3a03%3a255%26TestType=ECG%26Site=
1%26OutputType=PDF%26Ext=PDF|||||F

```

OBX coded diagnosis segments and data points (1 to n)

OBX segments that contain Diagnosis statements along with the MUSE statement library codes and waveform datapoints can also be sent in the ORU message. These formats are uncommonly used and therefore are not discussed here. A MUSE HL7 integration engineer can explain the formats and use of these OBX segments if necessary.

Embedded Image Option

If the HL7 embedded waveform option is purchased, the MUSE ORU message will be configured to contain an encoded image of the ECG report or selected pages from a Stress or Holter study. The image data is converted to an ASCII format that is compatible with HL7 and can be passed through the MUSE interface. The image can be passed in the HL7 message encoded in either UUencoding or Base64 encoding.

UUencoding

UUencoded images are sent in the ORU message in a Z segment. In addition, all datatypes except postscript are encrypted. The receiving system must decrypt and decode the waveform image component of the message to return the data to an image file that can be saved in the EMR.

Sample Z-segment (PDF option):

```
ZPD|1|PDF|89448^73272^ begin 644 WAV.DAT\X0D\X0A\  
M) 5!$1BTQ+C`*)>+C... .
```

See [Appendix C “Waveform Processing Rules” on page 137](#) for more information on ZRI waveform encryption and encoding.

Base64 Encoding

Base64 encoded images can be sent in the ORU message in a Z segment or in an OBX segment. Base64 encoded images are not encrypted.

Sample Z-segment with Base64 image in ZPD-3.5:

```
ZPD|PDF||^7288^JVBERi0xLjAKJeLjz9PoCiAgNSAw...|||F
```

Sample OBX with Base64 image in OBX-5.5:

```
OBX|11|ED|CARDLRR|^PDF^Base64^JVBERi0xLjAKJeLjz9PoCiAgNSA...|||F
```

Study Financial Message Composition

If a financial interface is purchased, the MUSE HL7 outbound interface is configured to send financial transactions from the MUSE system. Financial transactions are sent real-time or as batches as configured by the report distribution and batch settings in the MUSE system.

Financial (DFT) messages may contain the following message segments. See [“HL7 Data Segment Definitions” on page 51](#) for segment definitions.

MSH – Message Header

PID – Patient identification

PV1 – Patient visit

[OBR] – Observation request

FT1 – Financial Transaction

Batch Data Transfer

As previously mentioned, individual result or financial files are generated as described in [“Transactions From the MUSE HL7 Interface” on page 34](#). Outbound Batch files can be set up as an addition to the standard outgoing HL7 interface. You can configure batches to be sent once per day, twice per day, weekly, or monthly. At the preconfigured times, a batch message is created by gathering individual messages into a single file that is then sent to the HIS.

Batch Data Transfer Messages

Batch Data Transfer is an addition to the GE HL7 Outbound Interfaces. Batch Data Transfer can be used for either result or Financial messages. The Batch Data Transfer option includes a management tool for the batch file queue and batch file log entries in the MUSE application.

At the times configured in the MUSE Batch scheduler, the batch file is created by gathering the individual messages into batches and then into a single message file. The format of the Batch message is configurable in the MUSE application. Each Result format type or Billing format type will be sent in its own batch file. The GE HL7 Interface supports multiple BHS/BTS segment sets in a single batch file.

High level acknowledgment messages can be supported by the GE HL7 Interface for batch messages, but an acknowledgment for each individual message contained within the batch message is not supported

The batch files are maintained on the GE Healthcare system from 1 to 365 days and may be resent if needed during that time. The length of time the files are maintained is configurable.

A batch message has a batch block consisting of File Header, File Trailer, Batch Header, and Batch Trailer segments. Within the batch block we have Results ORU messages for Batch Results or Billing (DFT) messages for Batch Billing message.

Batch Results Message Structure

FHS
 BHS
 ORU Message 1
 ORU Message 2
 .
 .
 .
 BTS
 FTS

Batch Billing Message Structure

FHS
 BHS
 DFT Message 1
 DFT Message 2
 .
 .
 .
 BTS
 FTS

Segment Definition

FHS File Header Segment

SEQ	Optional/ Required	ELEMENT NAME	MUSE Field Length	MUSE Equivalent
1	O	File Field Separator	1	
2	O	File Encoding Characters	4	^~\&
3	O	File Sending Application	15	MUSE Batch
4	O	File Sending Facility	20	MUSE

FHS File Header Segment (cont'd.)

SEQ	Optional/ Required	ELEMENT NAME	MUSE Field Length	MUSE Equivalent
5	O	File Receiving Application	15	CCG
6	O	File Receiving Facility	20	CCG
7	O	File Creation Date/Time	26	
8	O	File Security	40	
9	O	Filename/ID	20	
10	O	File Header Comment	80	
11	O	File Control ID	20	
12	O	Reference File Control ID	20	

FTS—File Trailer Segment

SEQ	Optional/ Required	ELEMENT NAME	MUSE Field Length	MUSE Equivalent
1	O	File Batch Count	10	
2	O	File Trailer Comment	80	

BHS—Batch Header Segment

SEQ	Optional/ Required	ELEMENT NAME	MUSE Field Length	MUSE Equivalent
1	O	Batch Field Separator	1	
2	O	Batch Encoding Characters	4	^~\&
3	O	Batch Sending Application	15	MUSE Batch
4	O	Batch Sending Facility	20	
5	O	Batch Receiving Application	15	CCG
6	O	Batch Receiving Facility	20	
7	O	Batch Creation Date/Time	26	
8	O	Batch Security	40	
9	O	Batch Name ID/Type	20	
10	O	Batch Comment	80	

BHS—Batch Header Segment (cont'd.)

SEQ	Optional/ Required	ELEMENT NAME	MUSE Field Length	MUSE Equivalent
11	O	Batch Control ID	20	
12	O	Reference Batch Control ID	20	

BTS—Batch Trailer Segment

SEQ	Optional/ Required	ELEMENT NAME	MUSE Field Length	MUSE Equivalent
1	O	Batch Message Count	10	
2	O	Batch Comment	80	
3	O	Batch Totals	100	

4

HL7 Query Implementation

Introduction

The HL7 Standard Interface is used to connect a hospital's information system (HIS) to the MUSE HL7 Interface to exchange data. The MUSE HL7 Interface supports querying for patient demographics by patient ID. The response message (inbound data) is processed in real-time. This gives MUSE the ability to ensure that it has up-to-date patient demographics when interacting with a system that does not provide unsolicited HL7 updates.

The MUSE system can be configured to trigger a demographics query based on certain user or system actions.

The MUSE HL7 Interface can be configured to query a HIS through the Standard HL7 Interface, or it can be configured to query data provided by a web service (this is a common approach in MPI interactions).

Low-level Communications

The specific installation determines which low-level communication protocol is used. The HL7 interface standard is designed to accommodate a wide variety of communication methodologies, from message-based communications to file transfer schemes.

Implementation of the low-level communication protocol does not directly affect the HL7 interface message content and functionality. Not all low-level communication protocols support high-level acknowledgments. Therefore, if high-level acknowledgments are desired, a low-level protocol that supports them must be selected.

The HL7 interface assumes that the low-level communication protocol ensures that the data arrives error-free. As a result, no data integrity checking is done at the application level. The MUSE HL7 interface allows only TCP/IP socket communication for HL7 queries.

Interface Data Content

There are only two HL7 message types involved in the MUSE-supported demographics query (Q01 - the query message, and A19 - the response message). You may need

to map certain data fields within the HL7 segments for the outgoing or the incoming message. The MUSE HL7 Interface configuration program (CCG) defines the mapping.

The configuration programs use data tables and scripting to determine how to process outgoing query and incoming response HL7 messages. The configuration programs match the HL7 fields and functions specified by a customer to the MUSE data fields

The following section “[Query Transactions of the MUSE HL7 Interface](#)” provides the general format of the Q01 (query) and A19 (response) HL7 data messages used by the MUSE system for the demographics query.

Query Transactions of the MUSE HL7 Interface

The MUSE system manages and stores patient studies and related patient demographics associated with them. In some situations, patient demographics are not sent by a HIS, but the HIS supports being queried for them. In these cases, the MUSE HL7 Interface can be configured to query the HIS for patient demographics by patient ID. Patient demographic queries can be initiated manually by a user, and/or can be configured to take place automatically. Queries may be configured to execute automatically in these cases:

- A study is normalized (acquired)
- A study is opened in the MUSE Editor
- On an ancillary device/system demographics request

Once the messages enter the MUSE system, a task parses the message data and creates or alters entries in the MUSE database. MUSE system users may then view the information.

Query Transaction HL7 Messages

Q01 - Immediate response query and A19 - ADT Response are two HL7 messages used in the patient demographics query.

Q01 - Immediate Response Query

This message is generated by the MUSE system. It contains the patient ID for which demographics are requested.

It consists of the following data segments:

- MSH - Message header
- QRD - Query definition
- QRF - Query filter

```
MSH|^~\&|MUSE|SITE0001||20091006163843||QRY^Q01||P|2.4| ¶
QRD|20091006163843|R||0910061638||1^RD|000112233^Y|DEM||| ¶
QRF|MUSE||||| ¶
```

Example HL7 Query Message (Q01)

A19 - ADT Response

This message is generated by the HIS. It contains the requested demographics.

It consists of the following data segments:

- MSH - Message header
- QRD - Query definition
- EVN - Event type
- PID - Patient identification
- PV1 - Patient visit

NOTE:

Depending on the configuration of the HIS, it may require a different HL7 query message, and respond with a different HL7 response message. In this case, the required data segments can be mapped using tables in the MUSE HL7 Interface.

```
MSH|^~\&||MUSE|SITE0001|20091006163844||ADT^A19|P|2.4| |
MSA|AA||| |
QRD|20091006163843|R||0910061638||1^RD|000112233^Y|DEM||| |
EVN|A19|20091006163844| |
PID||000112233||Bourgault^Efren|Jones|19750902012345|F||1002-5|1313
Mockingbird Lane|||12345 |
PV1| |||||VisitNumberID^~~~~~| ||||| |
```

Example HL7 Response Message (A19)

5

System Data Field Definitions

The MUSE system stores the patient demographic, visit, and order information. Following are the definitions for the various fields that are maintained on the MUSE system.

ADT Fields

MUSE System ADT Fields – Patient Demographic Information

Type	Description	Length
Patient ID	Patient Identifier, unique alphanumeric value	16
Last, First name	Patient last and first name	40, 20
Alternate PID	Alternate Patient Identifier,	16
Date of birth	Patient date of birth	16
Sex	Patient gender, mapped from HIS ADT or ORM message	16
Race	Patient race, mapped from HIS ADT or ORM message	16
Height	Patient height	n/a
Weight	Patient weight	n/a
Kanji name	Alternate patient identifier	64
Prior alternate ID	Prior alternate patient identifier	16
Mailing address line 1	Mailing Address	32
Mailing address line 2	Mailing Address	32
City	City	32
State	State	32
Postal code	postal/zip code	32
Country	Country	32
Phone number 1	Patient's first phone number	32

MUSE System ADT Fields – Patient Demographic Information (cont'd.)

Type	Description	Length
Phone number 2	Patient's second phone number	32
Extra data 1	Additional textual information field	32
Extra data 2	Additional textual information field	32
Extra data 3	Additional textual information field	32
Extra data 4	Additional textual information field	32

MUSE System ADT Fields – VISIT - Patient Visit Information

Type	Description	Length
Account number	Account number	20
Patient location	Patient location	20
Room	Patient room identifier	32
Bed	Patient bed identifier (number)	12
HIS Disposition	HIS patient disposition	19
Admission type	Admission type (ER, Accident, L&D, Routine)	19
Alternate Location	Alternate patient location	20
Attending MD name	Name of attending physician	40, 20
Attending MD HIS ID	HIS ID of attending physician	32
Admitting MD name	Name of admitting physician	40, 20
Admitting MD HIS ID	HIS ID of admitting physician	32
Referring MD name	Name of referring physician	40, 20
Referring MD HIS ID	HIS ID of referring physician	32
Consulting MD name	Name of consulting physician	40, 20
Consulting MD HIS ID	HIS ID of consulting physician	32
Other Healthcare Provider name	Name of other healthcare provider	40, 20
Other Healthcare Provider HIS ID	HIS ID of other healthcare provider	32
Primary Diagnosis	Primary patient diagnosis	32

MUSE System ADT Fields – VISIT - Patient Visit Information (cont'd.)

Type	Description	Length
Secondary Diagnosis	Secondary patient diagnosis	32
Tertiary Diagnosis	Tertiary patient diagnosis	32
Admit Diagnosis	Patient admit diagnosis	80
Admission Date/Time	Admission Date/Time	n/a
Hospital Service	Hospital Service expected for this visit	19
Admission source	Source of patient admission	32
Ambulatory status	Ambulatory status of patient	64
Alternate Visit Number	Alternate visit number	20
Visit number	Visit/encounter number	20
Discharge disposition	Discharge disposition (discharged to home, expired)	32
Service facility	Facility where service is being performed	16
Discharge Date/Time	Date of patient discharge	date/time
Extra data 1	Additional textual information field	32
Extra data 2	Additional textual information field	32
Extra data 3	Additional textual information field	32
Extra data 4	Additional textual information field	32

Order Fields

MUSE System Order Fields – Information for an order for a study occurrence

Type	Description	Length
Placers order number	HIS-generated order number	22 ¹
Start date/time	Time the order is scheduled for the study to be performed	n/a
Filler's Order Number	Filler's Order Number	22
Priority	Scheduled priority for order (STAT, Routine,...)	32
Parent order number	Parent Order Number	22

1. The MUSE system accepts order numbers up to 22 characters. However, many of the older GE Healthcare acquisition devices can accept a maximum of 9 characters. If you plan to download orders to acquisition devices, consult with your HL7 Integration engineers on strategies to manage order numbers with more than 9 characters.

MUSE System Order Fields – Information for an order for a study occurrence (cont'd.)

Type	Description	Length
Order placed date/time	Date and time the order was placed on the HIS system	n/a
Placed by name	Name of person who placed order	40, 20
Placed by HIS ID	HIS System ID of person who placed the order	32
Ordering MD name	Ordering physician first and last name	40, 20
Ordering MD HIS ID	HIS System ID of ordering physician, alphanumeric value	32
HIS test type	Universal service indicator code or billing code	32
HIS test type text	Textual description of study	64
Test reason	Reason for Test (textual)	80
Comments	Ordering Comments (textual)	80
Danger Code	Danger Code	n/a
Extra Data Field 1	Additional textual information field	32
Extra Data Field 2	Additional textual information field	32
Extra Data Field 3	Additional textual information field	32
Extra Data Field 4	Additional textual information field	32

6

HL7 Data Segment Definitions

The following tables provide definitions for the various HL7 data segments supported by the MUSE HL7 interface. Each segment field is provided in a separate table that describes the fields supported by the MUSE system, including the field length and optionality. The tables display the default locations for the data in a MUSE message. The MUSE HL7 engineer works with the customer to determine if they need to re-map any data field for proper message processing.

NOTE:

The field lengths are the maximum lengths the MUSE system supports, not the maximum length by the HL7 definitions.

Inbound (to MUSE) Segments

Explanation of Table Headings — Inbound

Table Heading	Description
HL7 Seq	This indicates the sequence numbers that can be included as part of the message.
Item #	The HL7 standard item identifier.
MUSE Field Length	This is the maximum length of the field within the MUSE application. This length does not include HL7 delimiters.
Supported Y/N	Yes if the default MUSE interface configuration supports this field.
Required Y/C/N	Y if the field is required. C if the field is conditionally required. N if the field is optional
HL7 Element Name	This is the specific HL7 field referenced by the segment and sequence number.
MUSE Equivalent	This indicates the field in the MUSE application that corresponds to the HL7 field. Not applicable indicates that the field does not have a corresponding field within the MUSE application.
TT	This is a Y/N indicator specifying if this field requires a translation table.
Notes	This space is provided for adding notes.

Message Header Segment (MSH) Definitions

HL7 Seq	Item #	MUSE Field Length	Supported	Required	HL7 Element Name	MUSE Equivalent	TT	Notes
1	00001	1	Y	Y	Field Separator	Not Applicable	N	
2	00002	4	Y	Y	Encoding Characters	Not Applicable	N	
3	00003	15	Y	N	Sending Application	Not Applicable	N	The Sending Application field value is dependent on the message originator.
4	00004	20	Y	N	Sending Facility	Not Applicable	N	
5	00005	15	Y	N	Receiving Application	Not Applicable	N	The Receiving Application Field value is dependent on the message originator.
6	00006	20	Y	Y	Receiving Facility	MUSE Site	Y	
7	00007	26	Y	N	Date/Time of Message	Not Applicable	N	
9	00009	15	Y	Y	Message Type	Not Applicable	N	
10	00010	20	Y	Y	Message control ID	Not Applicable	N	The format of the Message Control ID is determined by the originating application. The receiving system must be able to accept transactions regardless of the format of this field, and must return the Control ID in its original format. This field is not required when high level acknowledgments are not used.
11	00011	3	Y	Y	Processing ID	Not Applicable	N	
12	00012	60	Y	Y	Version ID	Not Applicable	N	

Message Acknowledgment Segment (MSA) Definitions

HL7 Seq	Item #	MUSE Field Length	Supported	Required	HL7 Element Name	MUSE Equivalent	TT	Notes
1	00002	2	Y	Y	Acknowledgment Code	Not Applicable	N	
2	00003	26	Y	Y	Message Control ID	Not Applicable	N	The message control ID for the acknowledgment will match the control ID of the message being acknowledged.
3	00004	80	Y	N	Text Message	Not Applicable	N	

54 **Event Type Segment (EVN) Definitions**

HL7 Seq	Item #	MUSE Field Length	Supported	Required	HL7 Element Name	MUSE Equivalent	TT	Notes
1	00099	3	Y	Y (see note)	Event Type Code	Not Applicable	N	Required for ADT messages only.

Patient Identification Segment (PID) Definitions

HL7 Seq.	Item #	MUSE Field Length	Supported	Required	HL7 Element Name	MUSE Equivalent	TT	Notes
1	00104	4	Y	Y	Set ID-PID	Not Applicable	N	
3	00106	16	Y	Y	Patient Identifier List	Patient ID	N	
4	00107	16	Y	N	Secondary Patient ID-PID	Secondary ID	N	
5.1	00108	40	Y	N	Patient Last Name	Last Name	N	
5.2	00108	20	Y	N	Patient First Name	First Name	N	
7	00110	26	Y	N	Date/Time of Birth	Date of Birth	N	Time value will be disregarded by the MUSE system.
8	00111	16	Y	N	Sex	Sex	Y	
9	00112	64	Y	N	Patient Alias	Kanji Name	N	
10	00113	16	Y	N	Race	Race	Y	
11.1	00114	32	Y	N	Patient Address Line	Mailing Address	N	
11.2	00114	32	Y	N	Patient Address Line	Mailing Address	N	
11.3	00114	32	Y	N	City	City	N	
11.4	00114	32	Y	N	State	State	N	
11.5	00114	32	Y	N	Postal Code	Postal Code	N	
11.6	00114	32	Y	N	Country Code	Country	N	
13	00116	32	Y	N	Phone Number - Home	Phone Number 1	N	

Patient Identification Segment (PID) Definitions (cont'd.)

HL7 Seq.	Item #	MUSE Field Length	Supported	Required	HL7 Element Name	MUSE Equivalent	TT	Notes
14	00117	32	Y	N	Phone Number - Business	Phone Number 2	N	
18	00121	20	Y	N	Patient Account Number	Account Number	N	
19	00122	16	Y	N	SSN- Patient	Not Applicable	N	SSN is stored in the ADT database but is not displayed in the MUSE system.

Patient Visit Segment (PV1) Definitions

HL7 Seq.	Item #	MUSE Field Length	Supported	Required	HL7 Element Name	MUSE Equivalent	TT	Notes
1	00131	4	Y	Y	Set ID-PV1	Not Applicable	N	
2	00132	16	Y	N	Patient Class	Patient Class	Y	
3.1	00133	20	Y	N	Assigned Patient Location – Point of Care	HIS Location	Y	This value is mapped to the MUSE Location in the MUSE system.
3.2	00133	20	Y	N	Room	Room	N	
3.3	00133	16	Y	N	Bed	Bed	N	
4	00134	4	Y	N	Admission Type	Admission Type	N	
7.1	00137	32	Y	N	Attending Doctor	Attending MD HIS ID	N	
7.2	00137	40	Y	N	Attending Doctor	Attending MD Name Last	N	
7.3	00137	20	Y	N	Attending Doctor	Attending MD Name First	N	
8.1	00138	32	Y	N	Referring Doctor	Referring MD HIS ID	N	
8.2	00138	40	Y	N	Referring Doctor	Referring MD Name Last	N	
8.3	00138	20	Y	N	Referring Doctor	Referring MD Name First	N	
9.1	00139	32	Y	N	Consulting Doctor	Consulting MD HIS ID	N	
9.2	00139	40	Y	N	Consulting Doctor	Consulting MD Name Last	N	
9.3	00139	20	Y	N	Consulting Doctor	Consulting MD Name First	N	
10	00140	19	Y	N	Hospital Service	Hospital Service	N	

Patient Visit Segment (PV1) Definitions (cont'd.)

HL7 Seq.	Item #	MUSE Field Length	Supported	Required	HL7 Element Name	MUSE Equivalent	TT	Notes
14	00144	3	Y	N	Admit Source	Admit Source	N	
15	00145	2	Y	N	Ambulatory Status	Ambulatory Status	N	
17.1	00147	32	Y	N	Admitting Doctor	Admitting MD HIS ID	N	
17.2	00147	40	Y	N	Admitting Doctor	Admitting MD Name Last	N	
17.3	00147	20	Y	N	Admitting Doctor	Admitting MD Name First	N	
19	00149	20	Y	Y	Visit Number	Visit Number	N	For Customer Facilities that don't have or use Visit Numbers , the MUSE system can use the Account number (from PID-18) for this field.
36	00166	3	Y	N	Discharge Disposition	Discharge Disposition	N	
39	00169	2	Y	N	Servicing Facility	Servicing Facility	N	
44	00174	26	Y	N	Admit Date/Time	Admit Date	N	
45	00175	26	Y	N	Discharge Date/Time	Discharge Date	N	
50	00180	20	Y	N	Alternate Visit Number	Not Applicable	N	This value is not displayed in the MUSE application.
52.1	01274	32	Y	N	Other Healthcare Provider	Primary Care MD HIS ID	N	
52.2	01274	40	Y	N	Other Healthcare Provider	Primary Care MD Name Last	N	
52.3	01274	20	Y	N	Other Healthcare Provider	Primary Care MD Name First	N	

Merge Patient Information Segment (MRG) Definitions

HL7 Seq	Item #	MUSE Field Length	Supported	Required	HL7 Element Name	MUSE Equivalent	TT	Notes
1	00211	16	Y	C	Prior Patient Identifier List	Prior ID	N	Required for A18, A34, and A36 message types.
3	00231	20	Y	C	Prior Patient Account Number	Not Applicable	N	Required for A35 messages.
5	01279	20	Y	C	Prior Visit Number	Not Applicable	N	Required for A36, A42, A46 message types.

Common Order Segment (ORC) Definitions

HL7 Seq	Item #	MUSE Field Length	Supported	Required	HL7 Element Name	MUSE Equivalent	TT	Notes
1	00215	2	Y	Y	Order Control	Not Applicable	Y	
2	00216	22	Y	Y	Placer Order Number	Placer's Order Number	N	
3	00217	22	Y	N	Filler Order Number	Filler's Order Number	N	
7.4	00221	26	Y	N	Quantity/Timing - Start Date/Time	Start Date/Time	N	
7.6	00221	22	Y	N	Quantity/Timing - Priority	Priority	Y	
8	00222	22	Y	N	Parent	Parent Order Number	N	
9	00223	26	Y	N	Date/Time of Transaction	Order Placed Time	N	
10.1	00224	32	Y	N	Entered By - ID number	Placed By - HIS ID	N	
10.2	00224	40	Y	N	Entered By - Family Name	Placed By - last name	N	
10.3	00224	20	Y	N	Entered By -Given Name	Placed By -first name	N	
12.1	00226	32	Y	N	Ordering Provider - ID Number	Ordering Provider -- HIS ID	N	
12.2	00226	40	Y	N	Ordering Provider - Family Name	Ordering Provider - Last Name	N	
12.3	00226	20	Y	N	Ordering Provider - Given Name	Ordering Provider - First Name	N	

MUSE™ v9 Cardiology Information System

Observation Request Segment (OBR) Definitions (Inbound)

HL7 Seq	Item #	MUSE Field Length	Supported	Required	HL7 Element Name	MUSE Equivalent	TT	Notes
1	00237	4	Y	Y	Set ID – OBR	Not Applicable	N	
4.1	00238	32	Y	Y	Universal Service ID – Identifier	HIS Test Type	Y	
4.2	00238	32	Y	N	Universal Service ID – Text	HIS Test Type Text	N	
12	00246	64	Y	N	Danger Code	Not Applicable	N	
31.2	00263	80	Y	N	Reason for Study	Test Reason	N	

Note Segment (NTE) Definitions

HL7 Seq	Item #	MUSE Field Length	Supported	Required	HL7 Element Name	MUSE Equivalent	TT	Notes
1	00096	4	Y	Y	Set - ID NTE	Not Applicable	N	
3	00098	80	Y	N	Comment	Order Comments	N	

Observation Result Segment (OBX) Definitions

HL7 Seq	Item #	MUSE Field Length	Supported	Required	Element name	MUSE Equivalent	TT	Notes
1	00569	4	Y	Y	Set ID -OBX	Not Applicable	N	Segment Repetition 1 contains the patient height. Segment Repetition 2 contains the patient weight.
5.1	00573	10	Y	N	Observation Value	SegID = 1, Height Value in Inches SegID = 2, Weight Value in lbs	N	
5.2	00573	10	Y	N	Observation Value	SegID - 1, Height Value in cm SegID = 2, Weight Value in kg	N	

Diagnosis Segment (DG1) Definitions

HL7 Seq	Item #	MUSE field length	Supported	Required	Element name	MUSE Equivalent	TT	Notes
1	00375	4	Y	Y	Set ID -DG1	Not Applicable	N	
3	00377	32	Y	N	Diagnosis Code -DG1	Primary Diagnosis Secondary Diagnosis Tertiary Diagnosis (see note)	N	As DG1 can be a repeating group, DG1-3.1 can be used for multiple diagnoses. The MUSE system accepts up to 3 repeats and places the values in DG1-3.1 in to the Primary (first repeat), Secondary (second repeat), and Tertiary (third repeat) Diagnosis fields in the MUSE. system.
4	00378	80	Y	N	Diagnosis Description	Admitting Diagnosis	N	From the first repetition of the DG1 segment.

Outbound (from MUSE) Segments

Explanation of Table Headings — Outbound

Table Heading	Description
HL7 Seq	This indicates the sequence numbers that can be included as part of the message.
Item #	The HL7 standard item identifier
MUSE Field Length	This is the maximum length of the field within the MUSE application. This length does not include HL7 delimiters.
Present A/C	A (Always) indicates fields that are populated for any MUSE OB message. C (Conditional) indicates a field that may be populated depending on the study status, and/or study administrative or clinical completeness.
HL7 Element Name	This is the specific HL7 field referenced by the segment and sequence number.
MUSE Equivalent	This indicates the field in the MUSE application that corresponds to the HL7 field. Not applicable indicates that the field does not have a corresponding field within the MUSE application.
Notes	This space is provided for adding notes.

Message Segment (MSH) Definitions

HL7 Seq	Item #	MUSE field length	Present A/C	HL7 Element name	MUSE Equivalent	Notes
1	00001	1	Y	Field Separator		
2	00002	4	Y	Encoding Characters	^~ &	
3	00003	15	Y	Sending Application	MEI MUSE	
4	00004	20	Y	Sending Facility	MEI MUSE	
5	00005	15	Y	Receiving Application	HIS System	
6	00006	20	Y	Receiving Facility	CCG	
7	00007	26	Y	Date/Time Of Message		
9	00009	15	Y	Message Type	ORU messages will send ORU^R01 DFT messages will send DFT^P03	
10	00010	20	Y	Message Control ID	date/time stamp CCYYM MDDHH MMSS	
11	00011	3	Y	Processing ID	P	
12	00012	60	Y	Version ID	2.4	

Patient ID (PID) Segment Definitions (ORU and DFT)

HL7 Seq	Item #	MUSE field length	Present A/C	HL7 Element name	MUSE Equivalent	Notes
1	00104	4	A	Set ID - PID	Not Applicable	
3	00106	16	A	Patient Identifier List	Patient ID	
4	00107	16	C	Secondary Patient ID - PID	Secondary ID	Present if entered by user or sent to the MUSE system in the ADT registration message.
5.1	00108	40	C	Patient Last Name	Last Name	Present if entered by user or sent to the MUSE system in the ADT registration message.
5.2	00108	20	C	Patient First Name	First Name	Present if entered by user or sent to the MUSE system in the ADT registration message.
7	00110	26	C	Date/Time of Birth	Date of Birth	Present if entered by user or sent to the MUSE system in the ADT registration message.
8	00111	16	C	Sex	Sex	Present if entered by user or sent to the MUSE system in an ADT registration message.
9	00112	64	C	Patient Alias	Kanji Name	Present if sent in the ADT registration message.
10	00113	16	C	Race	Race	Present if entered by user or sent to the MUSE system in the ADT registration message.
11.1	00114	32	C	Patient Address Line 1	Mailing Address	Present if sent in the ADT registration message.
11.2	00114	32	C	Patient Address Line 2	Mailing Address	Present if sent in the ADT registration message.
11.3	00114	32	C	City	City	Present if sent in the ADT registration message.
11.4	00114	32	C	State	State	Present if sent in the ADT registration message.
11.5	00114	32	C	Postal Code	Postal Code	Present if sent in the ADT registration message.
11.6	00114	32	C	Country Code	Country	Present if sent in the ADT registration message.
13	00116	32	C	Phone Number - Home	Phone Number 1	Present if sent in the ADT registration message.

Patient ID (PID) Segment Definitions (ORU and DFT) (cont'd.)

HL7 Seq	Item #	MUSE field length	Present A/C	HL7 Element name	MUSE Equivalent	Notes
14	00117	32	C	Phone Number - Business	Phone Number 2	Present if sent in the ADT registration message.
18	00121	20	C	Patient Account Number	Account Number	Present if sent in the ADT registration message.
19	00122	16	C	SSN Number - Patient	Not Applicable	Present if sent in the ADT registration message.

Patient Visit Segment (PV1) Descriptions (ORU and DFT)

HL7 Seq	Item #	MUSE field length	Present A/C	HL7 Element name	MUSE Equivalent	Notes
1	00131	4	A	Set ID - PV1	Not Applicable	
2	00132	16	C	Patient Class	Patient Class	Present if sent in the ADT registration message.
3.1	00133	20	A	Assigned Patient Location - point of care	MUSE Location Name	
3.2	00133	20	C	Assigned Patient Location - Room	Room	Present if entered by user or sent to the MUSE system in the ADT registration message.
3.3	00133	16	C	Assigned Patient Location - Bed	Bed	Present if entered by user or sent to the MUSE system in the ADT registration message.
3.4	00133	8	A	Assigned Patient Location - Facility	MUSE Site	
3.7	00133	16	C	Assigned Patient Location - Building	HIS Location	Present if sent in the ADT registration message.
3.8	00133	4	A	Assigned Patient Location - Floor	MUSE Location ID	
4	00134	4	C	Admission Type	Admission Type	Present if sent in the ADT registration message.
7.1	00137	32	C	Attending Doctor	Attending MD HIS ID	Present if sent in the ADT registration message.
7.2	00137	40	C	Attending Doctor	Attending MD Name Last	Present if sent in the ADT registration message.
7.3	00137	20	C	Attending Doctor	Attending MD Name First	Present if sent in the ADT registration message.
8.1	00138	32	C	Referring Doctor	Referring MD HIS ID	Present if entered by user or sent to the MUSE system in the ADT registration message.
8.2	00138	40	C	Referring Doctor	Referring MD Name Last	Present if entered by user or sent to the MUSE system in the ADT registration message.
8.3	00138	20	C	Referring Doctor	Referring MD Name First	Present if entered by user or sent to the MUSE system in the ADT registration message.

Patient Visit Segment (PV1) Descriptions (ORU and DFT) (cont'd.)

HL7 Seq	Item #	MUSE field length	Present A/C	HL7 Element name	MUSE Equivalent	Notes
9.1	00139	32	C	Consulting Doctor	Consulting MD HIS ID	Present if sent in the ADT registration message.
9.2	00139	40	C	Consulting Doctor	Consulting MD Name Last	Present if sent in the ADT registration message.
9.3	00139	20	C	Consulting Doctor	Consulting MD Name First	Present if sent in the ADT registration message.
10	00140	19	C	Hospital Service	Hospital Service	Present if sent in the ADT registration message.
14	00144	3	C	Admit Source	Admit Source	Present if sent in the ADT registration message.
15	00145	2	C	Ambulatory Status	Ambulatory Status	Present if sent in the ADT registration message.
17.1	00147	32	C	Admitting Doctor	Admitting MD HIS ID	Present if sent in the ADT registration message.
17.2	00147	40	C	Admitting Doctor	Admitting MD Name Last	Present if sent in the ADT registration message.
17.3	00147	20	C	Admitting Doctor	Admitting MD Name First	Present if sent in the ADT registration message.
19	00149	20	C	Visit Number	Visit Number	Present if entered by user or sent to the MUSE system in the ADT registration message.
36	00166	3	C	Discharge Disposition	Discharge Disposition	Present if sent in the ADT registration message.
39	00169	16	C	Servicing Facility	Service Facility	Present if sent in the ADT registration message.
44	00174	26	C	Admit Date/Time	Admit Date	Present if sent in the ADT registration message.
45	00175	26	C	Discharge Date/Time	Discharge Date	Present if sent in the ADT registration message.
50	00180	20	C	Alternate Visit Number	Not Applicable	Present if sent in the ADT registration message.

Patient Visit Segment (PV1) Descriptions (ORU and DFT) (cont'd.)

HL7 Seq	Item #	MUSE field length	Present A/C	HL7 Element name	MUSE Equivalent	Notes
52.1	01274	32	C	Other Healthcare Provider	Primary Care MD HIS ID	Present if sent in the ADT registration message.
52.2	01274	40	C	Other Healthcare Provider	Primary Care MD Last Name	Present if sent in the ADT registration message.
52.3	01274	20	C	Other Healthcare Provider	Primary Care MD First Name	Present if sent in the ADT registration message.

Observation Request Segment (OBR) Definitions

HL7 Seq	Item #	MUSE field length	Present A/C	HL7 Element name	MUSE Equivalent	Notes
1	00237	4	A	Set ID	Not Applicable	
2	00216	22	C	Placer Order Number	Placer's Order Number	Present if entered by user or sent to the MUSE system in the ORM Order message.
3	00217	22	C	Filler Order Number +	Filler's Order Number	Present if sent to the MUSE system in the ORM Order message.
4.1	00238	32	C	Universal Service ID - Identifier	HIS Test Type	Present if sent to the MUSE system in the ORM Order message.
4.2	00238	32	C	Universal Service ID - Text	HIS Test Type Text	Present if sent to the MUSE system in the ORM Order message.
4.5	00238	12	A	Universal Service ID - Alternate Text	MUSE Test Name	
6	00240	26	A	Requested Date/Time	Current Date/Time	
7.1	00241	26	A	Observation Date/Time #	Test Date/Time	The date/time the study was performed.
7.2	00241	26	A	Observation Date/Time #	Test Time	Study Time is in Web format.
10	00244	32	C	Collector Identifier	Medicare ID of Acquisition Tech	Returned if built in MUSE Setup.
13.1	00247	12	A	Relevant Clinical Info - Text	User Defined Label	
13.2	00247	10	C	Relevant Clinical Info	User Defined Text	If entered by a MUSE user
14	00248	26	C	Specimen Received Date/Time	Edit Date/Time	Present if study was edited.

Observation Request Segment (OBR) Definitions (cont'd.)

HL7 Seq	Item #	MUSE field length	Present A/C	HL7 Element name	MUSE Equivalent	Notes
16.1	00226	32	C	Ordering Provider - ID Number	Ordering Provider - HIS ID	Present if sent to the MUSE system in the ORM Order message.
16.2	00226	40	C	Ordering Provider - Family Name	Ordering Provider - Last Name	Present if sent to the MUSE system in the ORM Order message.
16.3	00226	20	C	Ordering Provider - Given Name	Ordering Provider - First Name	Present if sent to the MUSE system in the ORM Order message.
20	00253	60	A	Filler Field 1 +	MUSE Test ID	
22	00255	26	A	Results Rpt/Status Chng - Date/Time	Current Date/Time	
25	00258	1	A	Result Status	MUSE Test Status	
29	00261	22	C	Parent	Parent Order Number	Present if sent to the MUSE system in the ORM Order message.
31	00263	80	C	Reason for Study	Test Reason	Present if entered by user or sent to the MUSE system in the ORM Order message.
32.1	00264	32	C	Principal Result Interpreter	Overreader Medicare ID	Present if the study was overread and the overreader was assigned a Medicare ID.
32.2	00264	40	C	Principal Result Interpreter	Overreader Last Name	Present if the study was overread.
32.3	00264	20	C	Principal Result Interpreter	Overreader First Name	Present if the study was overread.
32.11	00264	5	C	Principal Result Interpreter	Overreader MUSE User ID	Present if the study was overread.

Observation Request Segment (OBR) Definitions (cont'd.)

MUSE™ v9
Cardiology Information
System

2059568-021B

HL7 Seq	Item #	MUSE field length	Present A/C	HL7 Element name	MUSE Equivalent	Notes
33.1	00265	32	C	Assistant Result Interpreter	Fellow Medicare ID	Present if study was read by a Fellow and the Fellow was assigned a Medicare ID.
33.2	00265	40	C	Assistant Result Interpreter	Fellow Last Name	Present if the study was read by a Fellow.
33.3	00265	20	C	Assistant Result Interpreter	Fellow First Name	Present if the study was read by a Fellow.
33.11	00265	5	C	Assistant Result Interpreter	Fellow MUSE User ID	Present if the study was read by a Fellow.
34.1	00266	32	C	Technician	Acquisition Tech Medicare ID	
34.2	00266	40	C	Technician	Acquisition Tech Last Name	
34.3	00266	20	C	Technician	Acquisition Tech First Name	
34.11	00266	5	C	Technician	Acquisition Tech MUSE User ID	
35.1	00267	32	C	Transcriptionist	Editor Medicare ID	Present if study was edited and the editor was assigned a Medicare ID.
35.2	00267	40	C	Transcriptionist	Editor Last Name	Present if the study was edited.
35.3	00267	20	C	Transcriptionist	Editor First Name	Present if the study was edited.
35.11	00267	5	C	Transcriptionist	Editor MUSE User ID	Present if the study was edited.
36	00268	26	C	Scheduled Date/Time	Order Start Date/Time	Present if sent to the MUSE system in the ORM Order message.

Financial Transaction Segment (FT1) Definitions

Seq	HL7 Item Number	GE Field Length	Present A/C	Element Name	MUSE Equivalent	Notes
1	00355	4	A	Set ID		
4	00358	26	A	Transaction Date	Test Date/Time	
5	00359	26	A	Transaction Posting Date	Current Date/Time	
6.2	00360	8	A	Transaction Type	CG	The MUSE interface only supports charge transaction types. Credits are not supported through the interface.
7.2	00361	32	C	Transaction Code	HIS Test Type Text	Present if sent to the MUSE system in the ORM Order message.
8	00362	32	C	Transaction Description	HIS Test Type	Present if sent to the MUSE system in the ORM Order message.
10	00364	4	A	Transaction Quantity		The MUSE interface reports financial information on a study-by-study basis, therefore the quantity field is always one (1).
16.1	00133	20	A	Assigned Patient Location - Point of Care	MUSE Location Name	MUSE Location name of where the study was performed.
16.2	00133	20	C	Assigned Patient Location - Room	Room	Present if entered by the user or sent to the MUSE system in the ADT registration message.
16.3	00133	16	C	Assigned Patient Location - Bed	Bed	Present if entered by the user or sent to the MUSE system in the ADT registration message.
16.4	00133	8	A	Assigned Patient Location - Facility	MUSE Site	
16.7	00133	16	C	Assigned Patient Location - Building	HIS Location	Present if sent in the ADT registration message.

Financial Transaction Segment (FT1) Definitions (cont'd.)

Seq	HL7 Item Number	GE Field Length	Present A/C	Element Name	MUSE Equivalent	Notes
16.8	00133	4	A	Assigned Patient Location - Floor	MUSE Location ID	MUSE Location ID of where the study was performed.
18	00148	2	C	Patient Type		Present if sent in the ADT registration message.
20.1	00264	32	C	Principal Result Interpreter	Overreader Medicare ID	Present if the study was overread and the overreader was assigned a Medicare ID.
20.2	00264	40	C	Principal Result Interpreter	Overreader Last Name	Present if the study was overread.
20.3	00264	20	C	Principal Result Interpreter	Overreader First Name	Present if the study was overread.
20.11	00264	5	C	Principal Result Interpreter	Overreader MUSE User ID	Present if the study was overread.
21.1	00226	32	C	Ordering Provider - ID number	Ordering Provider - HIS ID	Present if sent to the MUSE system in the ORM Order message.
21.2	00226	40	C	Ordering Provider - Family Name	Ordering Provider - Last Name	Present if sent to the MUSE system in the ORM Order message.
21.3	00226	20	C	Ordering Provider - Given Name	Ordering Provider - First Name	Present if sent to the MUSE system in the ORM Order message.
23	00267	22	C	Placer Order Number	Placer's Order Number	Present if entered by the user or sent to the MUSE system in the ORM Order message.

Financial Transaction Segment (FT1) Definitions (cont'd.)

Seq	HL7 Item Number	GE Field Length	Present A/C	Element Name	MUSE Equivalent	Notes
24.1	00267	32	C	Transcriptionist	Editor Medicare ID	Present if study was edited and the editor was assigned a Medicare ID.
24.2	00267	40	C	Transcriptionist	Editor Last Name	Present if the study was edited.
24.3	00267	20	C	Transcriptionist	Editor First Name	Present if the study was edited.
24.11	00267	5	C	Transcriptionist	Editor MUSE User ID	Present if the study was edited.

Observation Result Segment (OBX) Definitions

HL7 Seq	Item #	MUSE field length	Present A/C	HL7 Element name	MUSE Equivalent	Notes
1	00569	4	A	Set ID -OBX		
2	00570	2	A	Value Type	ST, RP, CE, TX, FT	Configurable
3	00571	80	A	Observation Identifier	Appendix B "OBX Code Tables" on page 129.	
5	00573	65536	C	Observation Value	Measurement, Diagnosis, or Encoded Image Value	Repeating Field
6	00574	60	C	Units	If Applicable	
11	00579	1	A	Observ Results Status	MUSE Test Status	

Waveform Segment (ZRI) Definitions, UUencoded

HL7 Seq	Item #	MUSE field length	Present A/C	HL7 Element name	MUSE Equivalent	Notes
1	N/A	4	A	Set ID	N/A	
2	N/A	3	A	N/A	Waveform Description	See "Graphical Result Reporting Messages" on page 20
3.1	N/A	10	A	N/A	Number of Encrypted Bytes	Total number of bytes in the data field.
3.2	N/A	10	A	N/A	Number of Unencrypted Bytes	Total number of bytes of data once the HL7 escape characters are removed from the data and possibly UUDecoded.
3.3	N/A	N/A	A	N/A	Data	

80 **Waveform Segment Definitions, Base64 encoded**

HL7 Seq	Item #	MUSE field length	Present A/C	HL7 Element name	MUSE Equivalent	Notes
1	N/A	3	A	N/A	Waveform Image Type	See "Graphical Result Reporting Messages" on page 20
3.3	N/A	16	A	N/A	Encoded Waveform String Length	
3.5	N/A	N/A	A	N/A	Encoded Waveform String	
11	N/A	1	A	N/A	Test Status	

7

HIS Data Management

This section describes how to configure MUSE to perform clean-up of old HIS Patient/Visit Account and Order Data. The user can configure number of days to consider for clean up and also schedule the time when this scheduled task can run on MUSE.

Setup

MUSE must be set up to perform clean-up of old HIS data.

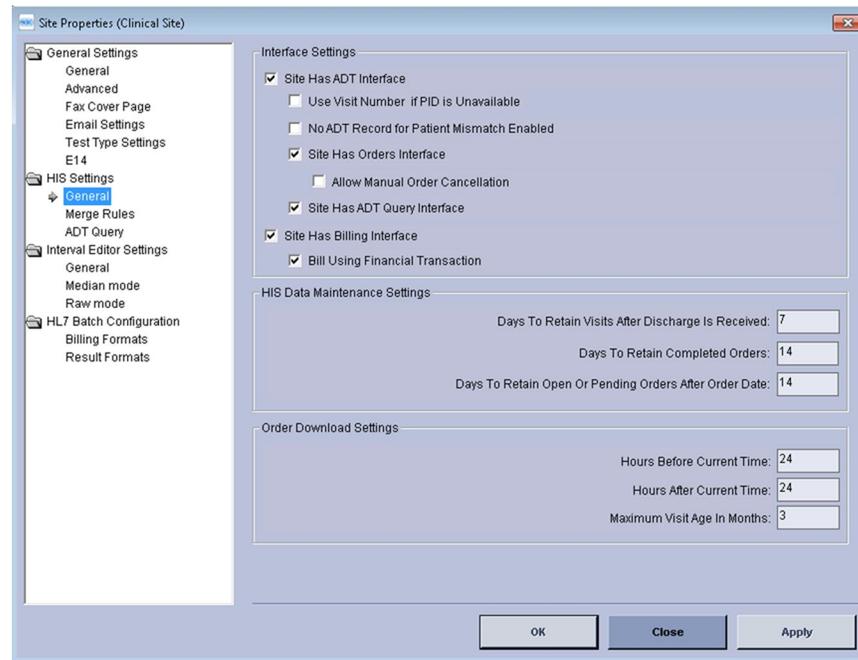
1. Go to **Setup > Sites > HIS Settings > General**.
2. At the **Number of days to retain visits after discharge is received** field, type a number up to 366 days. This option allows you to set the number of days to retain discharged accounts.

This option is for removing older visits/accounts for which a discharge transaction has been received (MUSE account status is Closed).
3. At the **Number of days to retain completed Orders** field, type a number up to 255 days. This option allows you to define the number of days before completed orders are purged.

This option is to delete completed orders that have been completed for longer than the number of days configured.

4. At the **Default number of days to retain open Orders after Order date** field, type a number up to 255 days. This option allows you to set how long you want an open order left in the open order list.

This option is to retain orders that are not fulfilled for over a specified number of days.

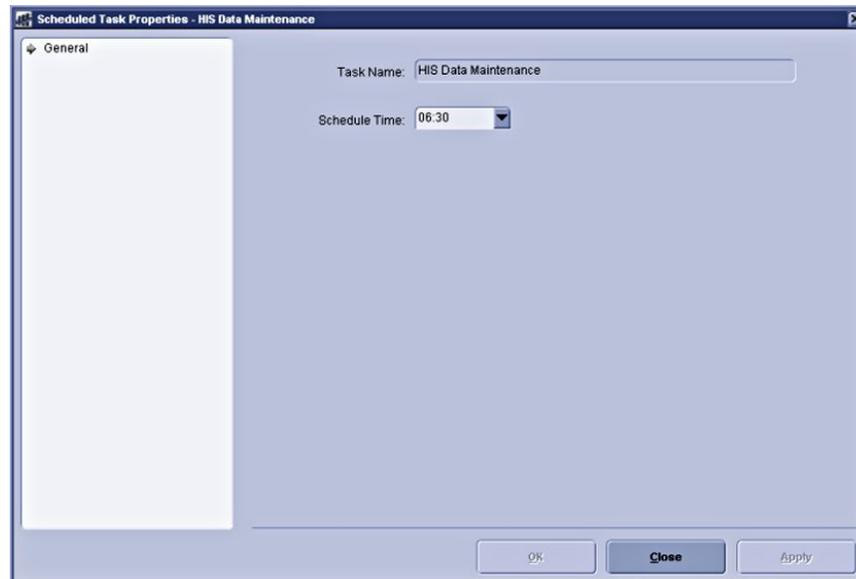


5. Click **Apply** and then click **OK**.

Scheduling HIS Data Maintenance

The HIS Data Management task will clean expired Accounts/Visits, Patients and orders from the temporary HIS tables as configured in the HIS settings configuration in the above section. The user can set the time of day that the HIS Data Maintenance will run.

1. Go to **Setup>Scheduled Tasks> HIS Data Maintenance >**. Then double click to open the **General** screen.



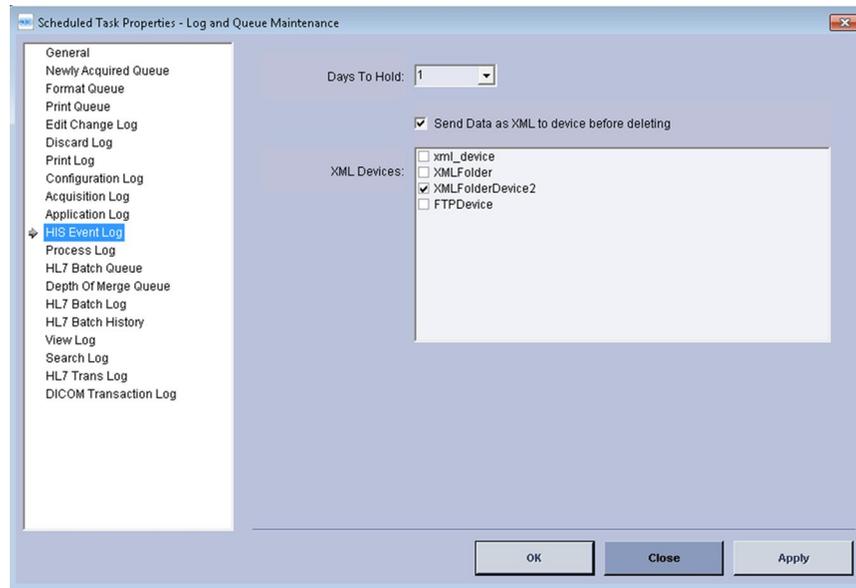
2. Select the **Schedule Time** to start the maintenance process.
3. Click **Apply** and then click **OK**.

Maintaining the Log and Queue

This option allows the user to set the number of days the HIS Event Log entries can be held in the MUSE system before cleanup.

1. Highlight **Scheduled Tasks** in the menu tree at the left side of the window.
2. Highlight **Log and Queue Maintenance**. Right-click and select **Properties**. The **Scheduled Task Property — Logs and Queues** window opens.
3. Highlight HIS Event Log in the menu tree at the left side of the window. Set the **Days to Hold**.

4. Select the **XML device** if applicable.
5. Click **Apply**, and then **OK** when finished.



HL7 Implementation FAQs

Frequently Asked Questions

ADT Fields and Functions

My HIS system uses ADT function A18 as an Account Number Merge, is this compatible with the MUSE system?

The MUSE system normally maps the A18 transaction to a Patient ID merge. Otherwise, the MUSE system can be configured to ignore the A18 transaction, or if the necessary data is present in the message, change the message to a message type that the MUSE system supports such as an A35. Health Level Seven Version 2.2 and later define new merge transactions that are also supported by the interface that may apply to this functionality. All merge transactions on the MUSE system require the Patient ID at a minimum.

My HIS system uses patient names larger than the MUSE system accepts. The original HIS name must be returned in result and billing messages. Will this work?

The MUSE system supports 40 character last names and 20 character first names. The system will truncate longer names.

At times, we admit patients under an alias that we want to send to the MUSE system. How does this work?

The MUSE interface and MUSE systems do not support a patient alias.

The ADT transactions A20 (patient bed status update), A21 (patient goes on a leave of absence), and A22 (patient returns from leave of absence) are not listed, does the MUSE interface support them?

No. The functions supported by the MUSE system are listed in this manual. If sent, A20, A21, and A22 transactions will error out in the HL7 interface engine. These transaction types should be filtered on the HIS side.

The PR1, GT1, IN1, ACC, and UB1 segments are not listed. Does the MUSE interface support them?

No. The segments supported by the MUSE system are listed in this manual. Depending upon the particular data sent in the PR1, GT1, IN1, ACC, or UB1 segments, the MUSE system may be optionally configured to store the data. This must be determined on a case by case basis. The data may not be viewable by the MUSE system users. The data may not be available to return in result or financial messages. Also, see next FAQ.

Our system uses a special Z segment (Z02, ZPV, etc.). Is this accepted by the MUSE system?

Possibly. In general, the MUSE system ignores segments not listed in this manual. However, the MUSE system interface may be optionally configured to map data fields from any segment in the HL7 message to corresponding fields in the MUSE databases. If the special Z segment contains data that can be stored on the MUSE system, it can be used. For example, HL7 does not specify patient height and weight in the standard segments, but it can be sent in a special Z segment. If the MUSE system is configured to recognize the Z segment as patient height and weight, the data will be accepted. Fields mapped like this may not be viewable on the MUSE system and/or may not be available to be returned in result or financial messages.

Our system uses system id and episode identifiers that are required in results. Can you store this information?

No. The MUSE interface does not store the system id and episode.

Does the MUSE system update order information in the studies on the MUSE server?

An ADT interface will update ADT information on the MUSE system; an order interface will update order information on the MUSE system. Order information is updated on a study only until the study is set to Demographics Complete status or higher.

Orders Fields and Functions

Our order messages may contain multiple OBR segments. Can the MUSE system accept it?

No. The MUSE system only processes one procedure per patient per message, i.e. one OBR segment per order message with quantity 1 (one).

We order recurring studies, 1 every day for 5 days at a set time or 1 every hour for 5 hours. How does the MUSE system handle this?

The MUSE system only processes one procedure per patient per message, i.e. one OBR segment per order message with quantity 1 (one). For this example, the HIS system would generate 5 individual order messages for a single study with the requested date and time for each study.

The PV1 segment is listed as optional. What does that mean?

The MUSE system uses information in the PV1 segment to update ADT and visit database information. When the HIS system is sending order messages only, more information can be gathered if the PV1 segment is sent with the order message. For HIS systems sending both ADT and order messages, the PV1 segment in the order message may be used to update ADT and visit information if configured to do so.

Our order system uses a 25-digit placer order number. Can the MUSE system accept that?

No. The MUSE system accept a maximum of 22 characters for the place order number.

NOTE:

Some ancillary devices accept only 9 character order numbers.

Our order system uses order number and occurrence number to identify patient studies. Does the MUSE system store this information?

The MUSE system requires a place order number which is a key to the order database (maximum of 22 characters).

Can you create order numbers for studys on the MUSE system?

No. The MUSE system is considered a filler of orders, not a placer.

Does the MUSE order interface use control codes NA, SN, OC, SS for processing orders?

No. The only order control codes applicable to the MUSE system are NW (new order), CA (cancel order), OD (Delete Order), and XO (update order).

Can the MUSE order interface assign order numbers to order requests or create requests for orders?

No. The MUSE system is considered a filler of orders not a placer.

Does the MUSE system send cancel order messages to the HIS?

No. The MUSE system depends on the HIS order system to create, cancel, and change orders. The MUSE system can be configured to allow users to cancel orders locally on the MUSE system, but this does not affect the HIS order system and is not communicated to the HIS system. In general, orders should be canceled on the HIS order system, not on the MUSE system.

Can the MUSE system users edit orders?

No. Order information is only changed by the updates from the HIS order system.

Result and Financial Messages Fields and Functions

Does the Physician ID on the MUSE system match the HIS ID?

Generally the MUSE ID and the HIS ID for physicians are not the same, however the HIS ID can be mapped, or "matched," to a MUSE user in MUSE User setup. The physicians on the MUSE system are given a User ID anywhere in the range from 1 – 65,535. Not all physicians in the HIS system have User IDs on the MUSE system.

We require the Hospital ID for physicians (overreader, referring, ordering), transcriptionists, etc. Does the MUSE system use the Hospital ID?

The MUSE system uses the *Medicare ID* field in the user list to store *Hospital ID* or mnemonics that are needed for result and financial messages. This field data is entered and maintained by the customer. The HIS system can maintain a lookup table that correlates the MUSE Information *System User ID* and the *Hospital ID*.

Our ADT and Order messages include the physician's hospital ID. We want this information returned in the results/financial messages.

The *Physician ID* information sent in the ADT and/or order messages is stored in the database *HIS ID* field up to 32 characters. When ADT and order information is matched to a study, physician information is stored with the study and can be returned in a results or financial message.

The only allowable status values for our results are pending and draft.

The MUSE interface has four standard report statuses, two unconfirmed statuses: Preliminary and Demographics Complete and two confirmed statuses: Final and Corrected/Revised Final. The interface can map the MUSE report status sent in the HL7 message to customer specifications.

Can you send the transaction dollar amount in the financial message?

The MUSE interface does not support transaction dollar amounts.

How does the MUSE system do credits?

The MUSE interface does not send credit messages

What are the options for interfacing waveform image data?

Waveform image data can be sent from the MUSE system to the HIS in an HL7 message. The image can be sent as PDF, TIFF, PostScript, PCL, and Windows Metafile. The image in the HL7 message will either be UUencoded or Base64 encoded and the HIS system will decode and display the graphics.

Do I need a Financial Interface and a Result Interface?

The MUSE HL7 interface option for sending HL7 financial transactions can be purchased. These are sent in real time or in batches. Some HIS systems may be able to generate charges based on the result transactions, and would therefore not require the separate financial option.

How and when will I receive duplicate financial messages?

There are three study states that can trigger a charge message, Newly Acquired, Demographics Complete, and Confirmed. If configured to do so, and a study is set to one of these states, a charge message is triggered and a billing message is formatted and sent to the HIS. When the billing message is properly formatted, a bit flag is set to indicate that a financial message has been sent for that test status. Note that there is a separate billing bit for each of the billing triggers (Newly Acquired, Demographics Complete, and Confirmed).

If after the first occurrence of a billing trigger a study is again set to the same state, the system will block a second financial message from being sent for that state. However, if the user has "re-bill" privileges, the user will receive a prompt and can then elect to either suppress the charge message or allow a second charge message to be generated.

NOTE:

You can add columns to the Edit List and Retrieval Pane to identify whether charges have been generated for a particular state. You can also find this information through a database search.

Communication Protocol Options

Our communication's protocol does not follow the HL7 standard; it uses a single character acknowledgment. Can the MUSE system be configured to accept this?

The MUSE supports standard HL7 original mode acknowledgment messages, not a single character or ACK/NACK acknowledgment.

We use the HL7 standard acknowledgments. Does MUSE support sequence protocol?

No.

Our system uses TCP/IP. When our side goes down, we send a shutdown message to our interfaces and want a shutdown message sent when the MUSE side goes down.

The MUSE system does not send shutdown messages, and they will be ignored. The MUSE system functions properly without shutdown messages. The MUSE inbound interface for ADT and orders starts and opens a listening port and waits for a connection from the HIS. When the connection from the HIS is released, the MUSE

inbound side releases the connection and reopens the listening port and waits for a connection to the host. The MUSE outbound interface only makes a connection to the HIS when messages are available to send. If the connection is not accepted, the MUSE system maintains the messages as it continues to try the connection.

Who is the client and who is the server?

The MUSE system will be the server for ADT and order transactions (including the patient demographics query). The MUSE system will be the client for result and financial transactions. This follows “the sending application is the client” rule.

HL7 Interface Testing

Introduction

The information in this document is designed to be a guide or starting point for GE Healthcare customers to use as they develop their test plans. The customer needs to review and revise the testing information contained in the reference-only test plans and customize them to meet their site's specific workflow and data exchange requirements.

The customer is ultimately responsible for ensuring the interfaces from their information systems to the MUSE system and from the MUSE system to their information systems update the sending and receiving system as expected to support the cardiology department and hospital workflow.

In many cases, the customer's information system department will have established testing plan materials in place to use for data validation and integrated testing. In that case, they can choose not to use the test example included in this document.

The implementation of each purchased HL7 interface will vary from customer to customer depending on the site's cardiology and other departments' workflow.

Test Goals

To completely exercise your system in the test environment, you should test all of the interface options and features purchased for your institution, such as ADT (Admit/Discharge/Transfer), Orders, Results, and Financials.

In addition, you should test your system under two different conditions: single transaction (functional or unit) tests and multiple transaction (end to end or integrated) tests.

Type of Testing	Description
Unit Tests	Functional or unit testing involves initiation of individual transactions and following them through the test environment to ensure that all data fields on the MUSE application are updated properly.
Integrated Tests	Integrated testing involves the simulation of the production workflow.

Customer Prerequisites for Interface Testing

The customer must perform the following steps to confirm that all the prerequisites for testing the HL7 interface are complete.

1. Obtain a copy of the document *MUSE v9 Cardiology Information System HL7 Reference* from your GE Healthcare HL7 engineer or GE Healthcare project manager.

Review the manual.

2. Verify your test environment mirrors the production environment.

NOTE:

To ensure that the Unit and Integrated Testing outcomes mirror the outcomes that will occur in the Production environment, the Customer needs to ensure that the TEST HIS (Hospital Information System), EMR, and interface engine environments are set up to mirror the production HIS, EMR, and interface engine environments.

3. Participate in the HL7 specification review with the GE Healthcare HL7 engineer.

Customers that are upgrading from a prior MUSE release to a MUSE v9 system are not required to have an in-depth specification review, unless new interfaces are being implemented as part of the v9 upgrade. Existing interfaces on a MUSE installation will be configured to match the prior interface formats as closely as possible. The MUSE v9 system may require some changes to the inbound or outbound HL7 messages that were used in the prior releases.

Customers who are new to the MUSE system or who will be implementing new HL7 interfaces will be required to have an in-depth specification review with their GE Healthcare HL7 engineer.

4. Verify the connectivity and message validation.

Customers need to verify that all HL7 transactions between the MUSE system and the site's HIS/EMR systems are successfully transmitted and processed.

Initial interface connectivity and high level message validation will be completed prior to formal unit testing. These tasks are to be completed by the customer's HL7 or clinical analyst and the GE Healthcare HL7 engineer .

5. Identify and schedule resources for interface testing.

Customer resources that are typically involved with the testing are included in the list below. Be aware that the resources required for the unit and integrated testing will vary from customer to customer based on interfaces purchased, number of sites defined in the MUSE system, number of inbound HIS and outbound EMR, and billing systems sending or receiving data.

- HL7 engineer/interface analyst
- IT clinical analyst
- IT network engineer
- IT registration analyst
- IT EMR analyst
- IT hospital billing analyst
- IT technical billing analyst

- Biomedical technician
- Patient registration staff
- Health information management staff
- Nursing and clinical staff
- EKG technicians
- MUSE system administrator

Test Procedures

The following is a reference-only test plan. It is important to test all aspects of your HL7 interface software. Be sure to create examples for each transaction and event type, and provide data that will test all of the options and features you have purchased.

The interface tests should be performed for each site configured on the MUSE system.

Test Sequence

The MUSE HL7 Interface consists of seven standard component interfaces:

- ADT (Admit/Discharge/Transfer)
- ADT query
- Order
- Result
- Result batch
- Financial
- Financial batch

Each component is a purchasable option. The complete interface may include one or any combination of these components. However, an ADT interface is required with an Order interfaces. We also highly recommend that an Order interface be included with each Financial interface.

While this varies from customer to customer depending on the interface component options purchased, the recommended sequence for test procedures is as follows:

- Test all ADT transactions that will be supported for each site.
- Test ADT Query for each site.
- Test all Order transactions that will be supported for each site.
- Test all Result transactions that will be supported for each site.
- Test Result Batch processing for each site.
- Test all Financial transactions that will be supported for each site.
- Test Financial Batch transactions for each site.
- Test the ability of the system to successfully recover from any shutdown that may occur during transaction processing.

Test Templates

Sample templates are provided for the major transaction types:

- [Appendix D “ADT Test Plan Templates” on page 139](#)
- [Appendix E “Order Test Plan Templates” on page 167](#)
- [Appendix F “Results Test Plan Templates” on page 183](#)
- [Appendix G “Results and Financials Test Plan Templates” on page 245](#)

Testing ADT Interface Transactions

The GE MUSE HL7 ADT interface accepts unsolicited messages for ADT transactions from the HIS (Hospital Information System). These messages must include data for only one patient.

NOTE:

The MUSE v9 HL7 ADT interface does not support batch processing of ADT transaction messages.

For thorough ADT interface testing, patient admission, discharge, and transfer events entered in the HIS trigger a corresponding HL7 ADT message and event. The message and event type sent in the HL7 transaction indicates what type of workflow event took place for the patient.

To ensure that the MUSE v9 database is updated as expected by the ADT messages sent from your HIS, each HL7 event type that you will be sending to MUSE needs to be tested.

To validate that an HL7 event type updates the MUSE database as expected, perform the action that triggers the event on your HIS (for example, to trigger an A01 event, Admit an Inpatient to your hospital test system; to trigger an A02 event, Transfer an existing Inpatient to a different room/bed on your hospital system; etc.), then compare the ADT data fields entered for the patient on your HIS with the data fields populated on the Admit and Visit information screens in the MUSE system.

To simplify testing and verification of the ADT transaction processing, we separate the tests into four groups:

- Transactions that add patient data
- Transactions that change patient data
- Transactions that merge patient data
- Transactions that delete patient data

Testing Transactions that Add Patient Data

The transactions that add patient data are described in the following table:

ADT Transactions that Add Patient Data

HL7 Event Type	Transaction Description	Action
A01	Admit patient	A new record is added to the MUSE database.
A04	Register a patient	A new record is added to the MUSE database.
A05	Pre-admit a patient	A new record is added to the MUSE database.
A10	Patient arriving	A new record is added to the MUSE database.
A13	Cancel discharge	A deleted record is reinstated in the MUSE database.

These transactions primarily affect patient identification data and can be verified on the MUSE v9 system by viewing the MUSE Admitting Information and Visit Information screens.

NOTE:

Only HL7 event types that will be sent to the MUSE system from the HIS (Hospital Information System) need to be tested.

Use the following steps to test the ADT transactions that add patient data:

- On your test HIS, begin by admitting a new patient.
This action triggers an A01 (Admit Patient) transaction to be sent to the MUSE system.
- Log on to the test MUSE system to verify that the newly admitted patient is in the MUSE system.
Follow the following instructions to view patient admitting and visit information in [“How to View Patient Admitting and Visit Information on the MUSE v9 System”](#) on page 102.
- Verify that the information displayed on the MUSE Admitting and Visit Information screen matches the information entered on your HIS.
It is highly recommended to do a field-by-field comparison between the data valued on the MUSE screens and the data valued on your HIS.
- Record any field that is not valued on the MUSE system, but was valued on your HIS.
For example, if the **Referring Doctor** field was valued on your HIS but not on the MUSE system, you need to investigate to determine why the field was not valued.

- Record any field that contains a value on the MUSE system that does not match the value in your HIS.

For example, if the patient's **Race** field on your HIS system was entered as "Hispanic," but the race listed on the MUSE system is "Black," you need to investigate to determine why the field was valued incorrectly.

NOTE:

Verification of the **Patient ID** field, as it is valued in the MUSE system, is critical. Most customers value the patient's medical record number in the **Patient ID** field. The **Patient ID** field on the MUSE system is used to uniquely identify the patient. The length and format on this field must remain consistent to ensure unique identification of the patient. During HL7 specification review, you need to determine the length and format of the **Patient ID** field.

- After verifying that all of the data fields for the Admit transaction has updated the MUSE system correctly, send another transaction that adds patient data and repeat step 2.
- Continue testing until all the transactions that add patient data for each site defined on the MUSE system have been tested and verified.

Testing Transactions that Change Patient Data

The transactions that change patient data are described in the following table:

ADT Transactions that Change Patient Data

HL7 Event Type	Transaction Description	Action
A02	Transfer a patient	The patient record is changed to reflect the new location information.
A06	Transfer outpatient to inpatient	The patient record is changed to reflect the new patient classification.
A07	Transfer inpatient to outpatient	The patient record is changed to reflect the new patient classification.
A08	Update patient information	The patient record is changed to reflect the new information.
A03	Discharge a patient	Patient record (account) status changes from open to closed.
A09	Patient departing	Patient record (account) status changes from open to closed.

ADT Transactions that Change Patient Data (cont'd.)

HL7 Event Type	Transaction Description	Action
A12	Cancel transfer	A patient transfer is canceled. The patient record is changed to show the location prior to the transfer.
A17	Swap patients	Used when two patients will exchange beds. Both patient records are changed to reflect the location changes.

NOTE:

Only HL7 event types that will be sent to the MUSE system from the HIS need to be tested.

Use these steps to test transactions that change patient data:

- On your test HIS, begin by admitting a new patient.
This action triggers an A01 (Admit Patient) transaction to be sent to the MUSE system.
- Log on to the test MUSE system to verify that the newly admitted patient is in the MUSE system.
Follow the following instructions to view patient admitting and visit information in [“How to View Patient Admitting and Visit Information on the MUSE v9 System”](#) on page 102.
- On your test HIS, select the patient admitted in step 1 and transfer the patient to another Nursing Unit Room/Bed.
- Verify that the patient location room/bed displayed on the MUSE Visit Information screen matches the new patient location room or bed information entered on your HIS,
- After verifying that the patient location on MUSE was updated by the Transfer transaction, send another transaction that changes patient data and verify that any data changed on the HIS is updated or changed on the MUSE Admitting and Visit Information screens.
- Continue testing until all of the transactions that change patient data for each site define on MUSE have been tested and verified.

Testing Transactions that Merge Patient Data

NOTE:

It is highly recommended that the customer’s Health Information Management, Integration Team, and Cardiology Department staff review the site configuration options for the depth of the merge implementation with the GE Healthcare HL7 engineer.

The MUSE system has the ability to be configured to allow patient study demographics and visit/account information stored on the MUSE to be automatically synchronized with the HIS system when specific HL7 messages are received. This data

synchronization may be configured to operate on both confirmed and unconfirmed study data as well as the MUSE site level patient demographics data store.

The following site level settings are available to control the behavior of the depth of the merge:

Site Level Merge Settings

Merge Level Setting	Description of Depth of Merge
Update Master MUSE Patient List	All depth of merge HL7 messages will update the MUSE site level demographics data. NOTE: Due to high traffic of update messages, it is not recommended to enable this option.
Update Unconfirmed Tests	All depth of merge HL7 messages will update unconfirmed patient tests.
Update Confirmed Tests for Merge Transactions Only	Merge specific HL7 message will update confirmed patient tests.
Update Full Patient Demographics Information from Merge Transactions	Update all fields. If not selected, only Patient ID , Last Name , First Name , and Date of Birth fields are updated.

Merge-specific HL7 messages are those that change patient ID, visit and/or account identifiers to the correct values. Currently, these are the only type of messages that target confirmed patient test data. The HL7 merge event type, along with the MUSE Depth of Merge Site configuration, determines what tables are updated in the MUSE system when the message is received.

The following table describes the transactions that merge patient data:

ADT Transactions that Merge Patient Data

HL7 Event Type	Transaction Description	Action
A18	Merge patient ID	Visits and orders associated with one PID (Non-surviving PID) are moved to a different PID (Surviving PID). The non-surviving PID is deleted. NOTE: A18 functionality is reserved for backwards compatibility. Use A34 instead.
A34	Merge patient ID	Visits and orders associated with one PID (Non-surviving PID) are moved to a different PID (Surviving PID). The non-surviving PID is deleted. (Same as A18.)

ADT Transactions that Merge Patient Data (cont'd.)

HL7 Event Type	Transaction Description	Action
A35	Merge account	Updates account number with new account number. If a non-surviving account number exists for a specific visit number, the non-surviving account number is changed to the surviving account number.
A36	Merge patient ID and account	Moves a specific visit associated with the non-surviving PID to the surviving PID. patient ID and account number are updated with the new patient ID and account number.
A42	Merge visit	The visit number and all associated orders are moved to the new visit number. All orders associated with the non-surviving visit number are moved to the surviving visit number and the non-surviving visit number is deleted.
A46	Merge visit	The visit number and all associated orders are moved to the new visit number. All orders associated with the non-surviving visit number are moved to the surviving visit number and the non-surviving visit number is deleted.

The following table describes the behavior of the HL7 Merge transactions and the MUSE Site Depth of Merge configuration.

Transaction	MUSE Patients	Test Unconfirmed	Test Confirmed
Merge Patient ID (A18, A34) Move all Visits associated with the non-surviving PID to the surviving PID and then deleting the Non surviving PID	If configured: Updates record with non-surviving PID to surviving PID and updates the Name and Date of Birth fields. If configured for full merge: Updates all patient level demographics fields.	If configured: Updates record with non-surviving PID to surviving PID and updates the Name and Date of Birth fields. If configured for full merge: Updates all fields.	If configured: Updates record with non-surviving PID to surviving PID and updates the Name and Date of Birth fields. If configured for full merge: Updates all patient level demographics.
Merge Patient ID and Account (36) Move a specific visit associated with the Non surviving Patient ID to the Surviving Patient ID	No Change: Other than standard synchronization of changing demographics on tests.	If configured: Updates record with non-surviving PID to surviving PID and updates the Name and Date of Birth fields. If configured for full merge: Updates all fields.	If configured: Updates record with non-surviving PID to surviving PID and updates the Name and Date of Birth fields. If configured for full merge: Updates all patient level demographics.
Merge Visits (A42, A46) Move all orders associated with Non surviving Visit Number to the Surviving Visit Number and delete the Non surviving Visit Number	No Change: Other than standard synchronization of changing demographics on tests.	If configured: Updates record with non-surviving PID to surviving PID and updates the Name and Date of Birth fields. If configured for full merge: Updates all fields.	If configured: Updates record with non-surviving PID to surviving PID and updates the Name and Date of Birth fields. If configured for full merge: Updates all patient level demographics.
Merge Accounts (A35) Changes Account Number	No Change: Other than standard synchronization of changing demographics on tests.	If configured: Updates record with non-surviving PID to surviving PID and updates the Name and Date of Birth fields. If configured for full merge: Updates all fields.	If configured: Updates record with non-surviving PID to surviving PID and updates the Name and Date of Birth fields. If configured for full merge: Updates all patient level demographics.

NOTE:

Only HL7 event types that will be sent to MUSE from the HIS need to be tested.

Use the following steps to test the ADT transactions that merge patient data:

1. On your test HIS, begin by admitting two (2) new patients.

The patients should be the same sex and have the same birthdate.

This action should trigger two A01 (Admit Patient) transactions to be sent to the MUSE system.

2. Log on to the test MUSE system to verify that both of the newly admitted patients are in the MUSE system.

Follow the following instructions to view patient admitting and visit information in [“How to View Patient Admitting and Visit Information on the MUSE v9 System” on page 102.](#)

3. Determine which one of the test patients entered in step 1 has the “correct” medical record number and information. This patient will have the “surviving” PID information following the merge.
4. On your test HIS, perform the steps to merge the medical record numbers for the patients registered in step 1 (generate A18 or A34 transaction).

Be sure that the patient identified in step 3 is the one that will have the “surviving” medical record number.

5. Verify that the patient with the “Non-Surviving” medical record number can no longer be found in MUSE using that “Non-Surviving” number.

Verify that any open orders, visits, and associated results for the patient with the “non-surviving” number are now displayed under the patient with the “surviving” medical record number.

NOTE:

The patient demographic, unconfirmed tests, and confirmed tests data will be updated according to the Site Depth of Merge configuration. For this reason, the merge test plans must be modified to meet the expected behavior for each MUSE site.

6. Test each HL7 merge event type that will be sent from the HIS system along with the Site Depth of Merge configuration for each site.

Testing Transactions that Delete Patient Data

The following table describes the transactions that delete patient data:

ADT Transactions that Delete Patient Data

HL7 Event Type	Transaction Description	Action
A23	Delete Patient	Visit specific information is deleted.
A11	Cancel admit	If no pending orders or reports are associated with the patient account that is canceled, the visit information, including open orders, is removed from the MUSE system.

NOTE:

Only HL7 event types that will be sent to MUSE from the HIS need to be tested.

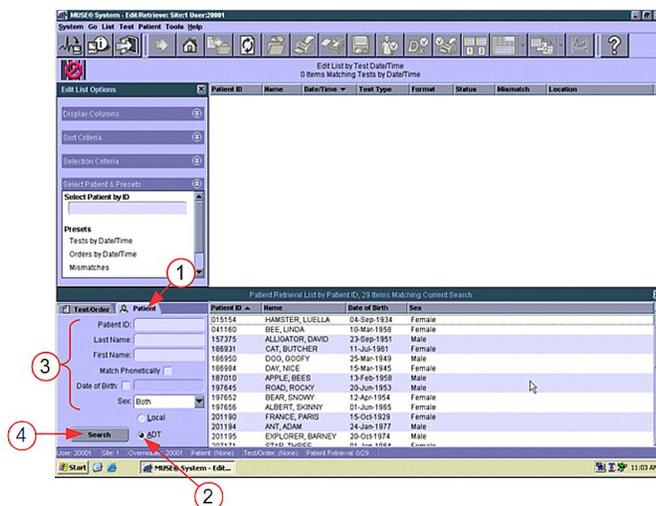
Use the following steps to test the ADT transactions that delete patient data:

1. On your test HIS, begin by admitting a new patient.
This action should trigger an A01 (Admit Patient) transaction to be sent to the MUSE system.
2. Log on to the test MUSE system to verify that the newly admitted patient is in the MUSE system.
Follow the following instructions to view patient admitting and visit information in “How to View Patient Admitting and Visit Information on the MUSE v9 System” on page 102.
3. On your test HIS, select the patient admitted in step 1 and cancel the patient admission.
4. Verify that all of the visit information (including open orders) is removed from the patient’s record.
5. Continue testing until all of the transactions that change patient data for each site defined on the MUSE system have been tested and verified.

How to View Patient Admitting and Visit Information on the MUSE v9 System

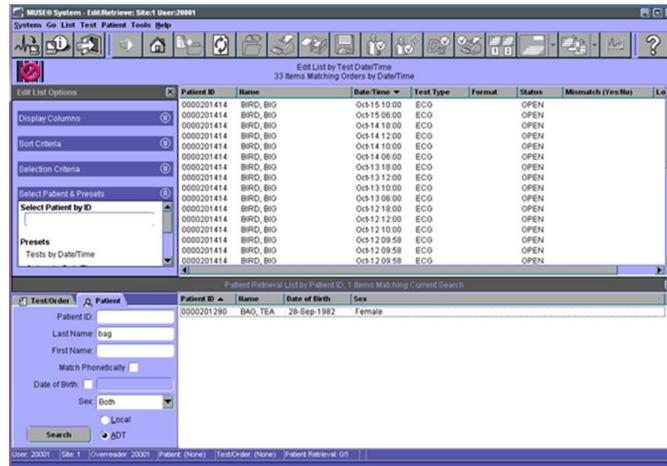
To view the data on the MUSE Admitting and Visit Information screen:

1. Select the **Patient** tab in the **Patient Retrieval List** panel.
2. Select the **ADT** radio button.
3. Type the patient search criteria. (Optional)
4. Select **Search**.



Searching with no criteria produces a list of all patients with ADT registrations in the MUSE system in the bottom right-hand panel. Note that there is a maximum number of patients that can be displayed at a time. You may be asked to enter criteria to reduce the result set.

Searching with criteria will display the patient registration(s) that meet the search criteria as shown in the following screen..



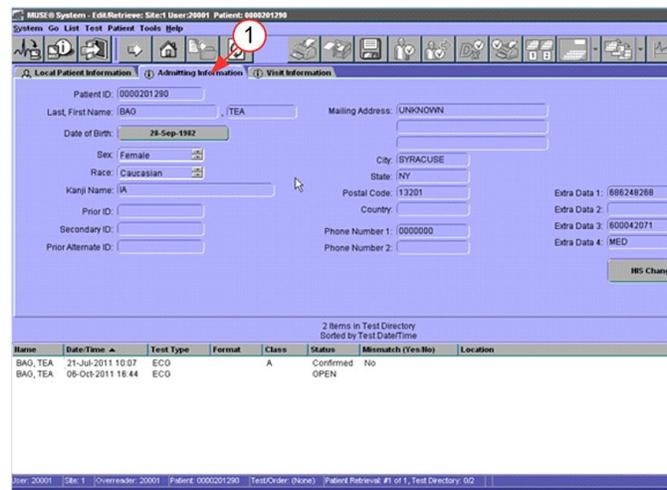
Use the following steps to view patient information.

1. Select the patient row from the **Patient Retrieval List**.
2. Press **Enter** or double-click the row.
The **Patient Detail Screen** opens.

Patient Admit and Visit information sent on ADT interface transactions can be viewed on the **Admitting Information** tab and **Visit Information** tab.

The patient demographic information contained on the Admitting Information screen (1) is usually static. For example, the **Patient ID** (usually the medical record number assigned to the patient on the HIS) does not change each time the patient has a new encounter or visit at the hospital. The patient date of birth, sex, race, address, etc. are also items that do not generally change from visit to visit

The following screen shows the **Admitting Information** tab.



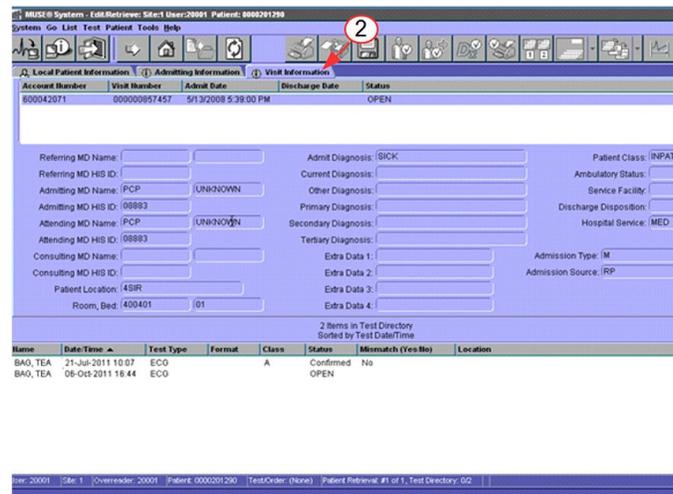
The patient demographic information contained on the Visit Information (2) screen is usually dynamic. For example, the **Account Number** usually changes each time the

patient has a new encounter or visit at the hospital. The patient location, patient class, Admitting MD, etc. generally change from visit to visit.

NOTE:

The patient may have one or many accounts/visits that are on the MUSE system. Each visit stored on MUSE is listed in the upper section of the **Visit Information** tab. To view the data for a specific visit, highlight the visit. The data displayed in the center of the screen is related to the highlighted, specific visit.

The following screen shows the **Visit Information** tab.



Testing Order Transactions

The MUSE v9 HL7 Order interface accepts unsolicited messages for Order transactions from the HIS. A message can only include data for one order.

The MUSE v9 HL7 Order interface does not support batch processing of Order transaction messages.

The following table describes the Order transactions that are supported by MUSE v9 HL7 Order interface:

ADT Transactions that Delete Patient Data

Order Control Code	Transaction Description	Action
NW	New order	Adds a new order to the database.
CA	Cancel order request	An existing order is canceled (discarded).

ADT Transactions that Delete Patient Data (cont'd.)

Order Control Code	Transaction Description	Action
DC	Discontinue order request	An existing order is discontinued (discarded).
XO	Change order request	An existing order is changed. NOTE: The MUSE system identifies unique orders by their Placer Order Number. A change to an existing order needs to have the same Placer Order Number for the MUSE system to update the target (original) order.

Use the following steps to test the Order transactions:

- On your test HIS, begin by admitting a new patient.
This action triggers an A01 (Admit Patient) transaction to be sent to the MUSE system.
- On your test HIS, place a new order for an EKG.
Type the data for all comment fields available in your HIS OE (Order Entry) system.
- Log on to the test MUSE system to verify that the new order for the patient is in the MUSE system.
Follow the following instructions to view patient order information in [“How to View Patient Order Information on the MUSE System”](#) on page 106.
- Verify the information displayed on the **MUSE Order Information** screen matches the information entered on your HIS.
It is highly recommended to do a field-by-field comparison between the data valued on the MUSE screens and the data valued on your HIS.
Record any field on the MUSE system that is not valued but was valued on your HIS. For example, if the **Reason for Exam** field was valued on your HIS but not on MUSE, you need to investigate to determine why the field was not valued.
Record any field on MUSE that contains a value that does not match the value entered on your HIS. For example, if the **Order Priority** field on your HIS was entered as **STAT** but the **Order Priority** listed on the MUSE system is **Routine**, you need to investigate to determine why the field was valued incorrectly.

5. After verifying that all data for the new order transaction has been processed correctly, send a Change Order transaction for the same order requisition and check the various screens to verify that the appropriate data has changed.

NOTE:

To ensure that Change Order transactions are tested completely, make a list of all of the fields that can be changed on the HIS OE (Order Entry) screens. Make sure that tests are executed that change these fields.

Orders can be distinguished from Tests by the case of the item's status. An Order's status is all upper case letters (for example, OPEN, DISCARDED). A Test's status are noted in mixed case (for example, Newly Acquired, Confirmed).

6. Follow the same procedures to test the Discontinue Order Request and the Cancel Order Request.
Verify that the order has been discontinued or cancelled.
7. Continue testing steps 1 through 6 for each test type (EKG, HiRes, Holter, and Stress), each test code (Refer to list of test codes identified on the HL7 Survey.), and each Order Priority that can be selected on the HIS system.

How to View Patient Order Information on the MUSE System

There are several ways to view patient orders on the MUSE system. Because the focus of this document is how to validate data sent from the HIS system to the MUSE system and not designed to train clinical staff on the use of the MUSE application, only one example is given.

1. Select the **Admitting Information** tab in the test MUSE system.
If the patient has the Order for MUSE tests, the orders are listed in the bottom panel of the Patient Detail screen (1).

The patient in the following screen has one order for an ECG.

Name	Date/Time	Test Type	Format	Class	Status	Mismatch (Yes/No)	Location
BAO, TEA	21-Jul-2011 10:07	ECO		A	Confirmed	No	
BAO, TEA	06-Oct-2011 16:44	ECO			OPEN		

- To view the **Order Information** screen, select the order (highlight the desired order and press **Enter**, or double-click on the row).

The **Order Information** opens.

This screen displays the details of the order that was sent from the hospital ordering system. When testing the Orders interface, verify that the data in each of the information fields matches the information that was entered in the ordering system.

Order Information

Patient ID: 0000201290
 Last, First Name: BAO, TEA
 Sex: Female
 Race: Caucasian
 Date of Birth: 28-Sep-1982
 Mailing Address: UNKNOWN
 City: SYRACUSE
 State: NY
 Postal Code: 13201
 Country: [Blank]
 Phone Number 1: 0000000
 Phone Number 2: [Blank]
 Extra Data 1: 688248268
 Extra Data 2: [Blank]
 Extra Data 3: 600042071
 Extra Data 4: MED

Order Status: OPEN
 Placer's Order Number: 389012071
 File's Order Number: 00001
 Parent Order Number: 00289
 Account Number: 600042071
 Visit Number: 00000857457
 Visit Status: OPEN
 Start Date/Time: 06-Oct-2011 16:44:00
 Order Placed Time: 06-Oct-2011 16:44:00
 Order Expires Time: 20-Oct-2011 16:44:00
 Priority: PREOP
 Host System ID: [Blank]

HIS Disposition: INPAT
 MUSE Location: [Blank]
 Patient Location: 4SR
 Room: 400401
 Bed: 01

Test Sub Type: FULL ECO
 HIS Test Type: EK058001503
 HIS Test Type Text: ELECTROCARDIOGRAM
 Test Reason: AORTIC INSUFFICIENCY
 Comments: Iso Ind-STANDARD
 Admitting Diagnosis: SICK

Referring MD: [Blank] MUSE ID: [Blank] HIS ID: [Blank]
 Ordering MD: PCP UNKNOWN MUSE ID: [Blank] HIS ID: 08893
 Attending MD: PCP UNKNOWN MUSE ID: [Blank] HIS ID: 08893
 Placed By: [Blank] MUSE ID: [Blank] HIS ID: MDUBRN

Extra Data 1,2: [Blank]
 Extra Data 3,4: [Blank]

When an order is downloaded to a cart, only specific fields are transferred to the cart. The fields from the order that transfer to a cart on order download are:

- Patient Name
- Patient ID
- Date of Birth/Age
- Gender
- Race
- Referring MD

- Placer’s Order Number
- Alternate ID/Secondary ID
- MUSE Location
- Room
- Ht. (height) and Wt. (weight)

NOTE:

Ht. and Wt. are not viewed with the patient data in the MUSE system. However, if they are sent to the MUSE system in an HL7 ADT message, they will download to the cart with the rest of the patient or order data.

Testing Result Transactions

This section details how to test the MUSE v9 HL7 Results interface to ensure successful transmission and processing of preliminary, final (confirmed), and corrected (or retransmitted) result messages. It is strongly recommended that a clinical staff member view the results that post to your HIS and/or EMR. The data values of the result report on the MUSE system and the result report posted to your HIS and/or EMR should match. All data from the report on the MUSE system that was identified during the HL7 specification review to be sent on the report to your HIS/EMR needs to be present.

Each of your HIS/EMR systems that will be receiving results from MUSE needs to be tested. Each type of test (EKG, Stress, Holter and HiRes) that will be sent from the MUSE system to your HIS/EMR will need to be tested.

Several HL7 result options are available to our customers:

HL7 Result Option	Description
Text	Discrete measurements and/or measurement and interpretation summary.
Waveform Images	Both digitized (UUEncoded) and waveform data points.
URL Link	A URL link can be stored on your HIS/EMR to launch the PDF image stored on the MUSE system. The link goes to MUSE Web or CV Web.

Test Procedures

The test procedures for result transactions are divided into two separate sets of instructions:

- Testing Result transactions on the MUSE system with inbound HL7 ADT interface only
- Testing Result transactions from the MUSE systems with inbound HL7 ADT and Order interface

Test Data

Before the Result testing can begin, test report data must be acquired into the MUSE system.

You will need to acquire data for reference-only studies. Your GE Healthcare HL7 engineer will populate numerous sample tests for each type of test that you will be implementing (EEG, HIRes, Holter, and Stress) into your test MUSE system acquisition folder.

You will need to acquire studies for test patients from ECG carts if you purchased Order download to the ECG carts in the HL7 interface implementation.

Testing Results on MUSE Systems with Inbound HL7 ADT Interface Only

As you select scenarios and data to test, you may want to also test "what-if" scenarios. For example, even though you have an ADT interface, what happens if the users don't attach a Visit prior to sending a preliminary or final result.

Use the following steps to test result messages on systems with an inbound HL7 ADT interface:

1. Work with your GE Healthcare HL7 engineer to ensure that report distribution is set up to automatically transmit a preliminary HL7 result report for demographics complete and final EKG.
2. Work with your hospital's HL7 engineer and HIS system analyst to have several test patients registered on your HIS test system.
3. Open a newly acquired EKG on the **Edit List** using the **Tests by Date/Time** preset. To send test HL7 Results to the MUSE system, use the instructions in "[How to Send Test HL7 Results from the MUSE System \(with Inbound HL7 ADT Interface\)](#)" on page 111.
4. Revise **Test Date/Time** to reflect the date/time you are performing the test.
5. Type the medical record number for one of the active test patients registered in step 2.

Update the patient name to resolve the mismatch. Click on the visit number field and select a visit. Save as **Demographics Complete** to edit list.

6. Verify that a Result Report with a Preliminary Status was successfully received and processed by your HIS/EMR system.

NOTE:

If you will not be sending preliminary results to your HIS/EMR, skip steps 5 and 6.

7. Log on to the MUSE system using the test doctor credentials.
8. Select (highlight) the Preliminary EKG study from step 5 on the **Edit List** using the **Tests by Date/Time** preset and select the **Confirm and Route** icon from the **Edit List** tool bar (be sure to select the icon with the check mark next to it, or from the menu, select Test, Save, Confirm, or Route).

9. Verify that a Result Report with a Final Status was successfully received and processed by your HIS/EMR system.

NOTE:

The MUSE system can send discrete text results, summary text results, UUEncoded waveform results, and URL link pointing to specific results on MUSE Web or CV Web in the result message depending on option purchased. When validating the result transactions, verify that each component that you are expecting in the ORU (result) message updates your HIS/EMR correctly.

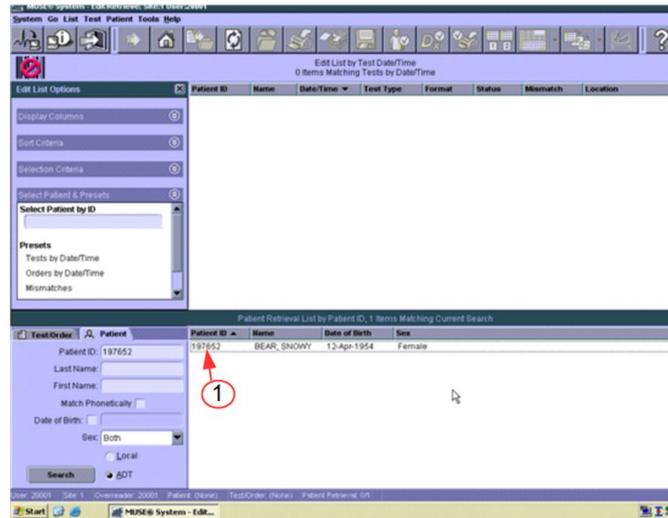
10. Log on to MUSE using test doctor credentials.
11. Select (highlight) the Final (Confirmed) EKG study from step 8 from the Test Retrieval List. Open the confirmed study and type `testing corrected report` in the interpretation section. Select the **Confirm and Route** icon from the Edit List tool bar instructions.
12. Verify that a Result Report with a Corrected or Amended Status was successfully received and processed by your HIS/EMR system.
13. Following steps 1 through 12, continue testing for each MUSE site and test result type (EKG, HiRes, Holter, and Stress) that you will be sending from the MUSE system to your HIS/EMR.

NOTE:

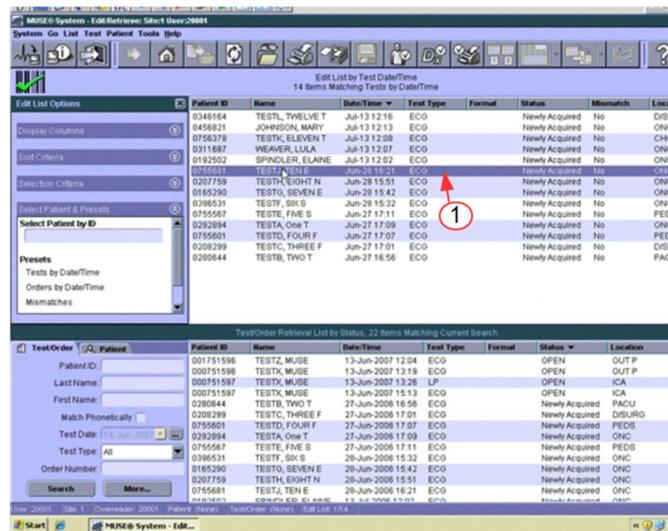
MUSE does not send out HL7 Order Status Update messages. Some customers use the ORU (Result) message to create an Order Status Update message on their interface engine to send to their HIS Ordering system. You will need to include this in your customized test plans if this is a part of your hospital's workflow.

How to Send Test HL7 Results from the MUSE System (with Inbound HL7 ADT Interface)

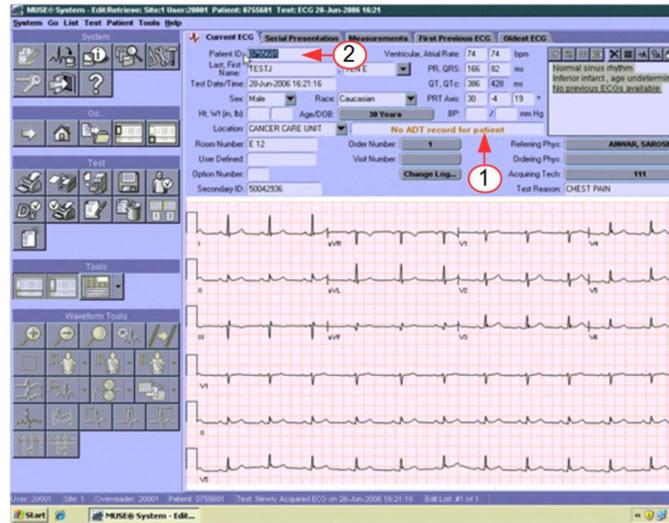
- To attach ADT (Admit and Visit) information to a test on the **Edit List**, first note the PID/MRN (1) of a test patient existing in the MUSE system.



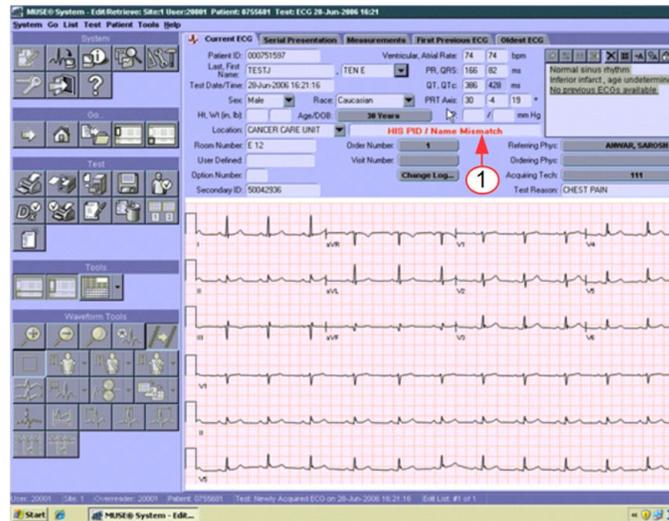
- Open a **Newly Acquired** test (1) from the **Edit List**.



- Note that there is no Mismatch on this test as it has the “No ADT record for patient notification message.” (1)
Highlight the PID/MRN (2) on the test and enter the PID/MRN.



- With the PID/MRN entered, the test now has a “HIS PID/Name Mismatch.” (1)



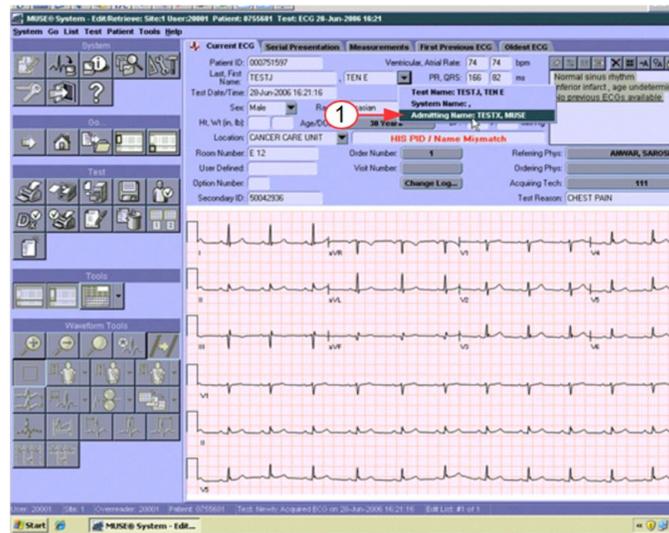
- Correct this Mismatch by selecting the drop-down arrow next to the patient name and select the “Admitting Name” (1).

The Admitting Name is the name in the HIS database that matches the PID/MRN that you entered.

The “dummy” test used for this example had an **Order Number** associated with it.

After correcting the HIS PID/Name Mismatch that there is a now a PID/Order Mismatch (1). If no order is associated with the study then “No Mismatch

Detected” will be valued. Before correcting the PID/Order Mismatch verify that the desired Test Date/Time is valued.



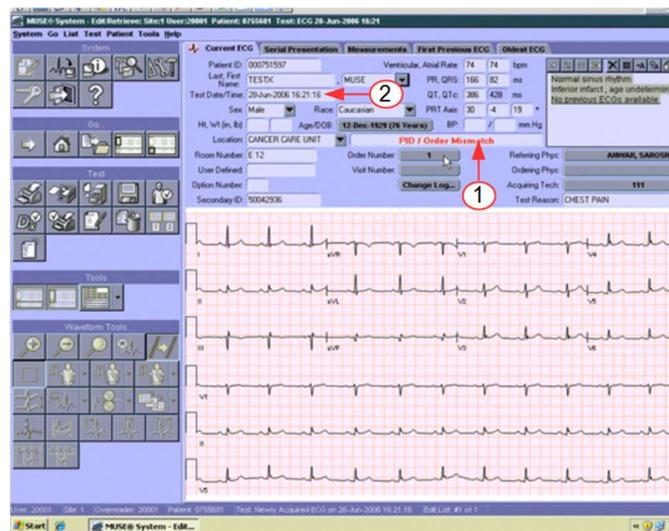
6. Check the **Test Date/Time**.

Many of the “dummy” tests that are entered on the system for testing have old Test Date/Times associated to them. The Test Date/Time needs to reflect the Date/Time of the Order that you are going to attach.

To change the Test Date/Time highlight the Date/Time and enter desired Date/Time (2).

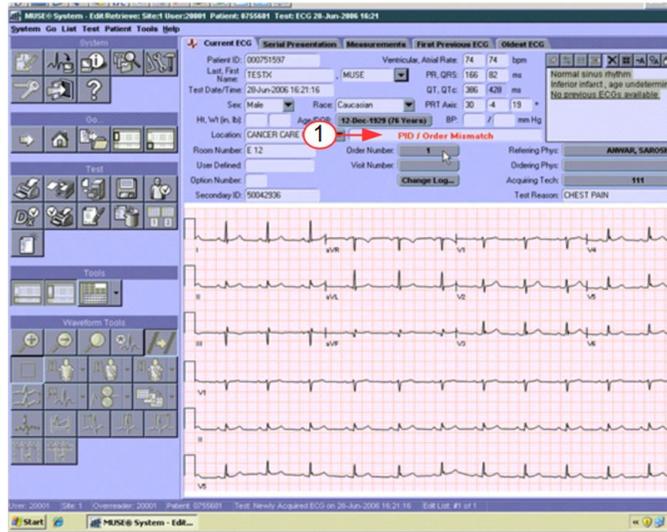
NOTE:

The date time format must be entered in the required format. If the you want the Date/Time to be March 18, 2011 at 0900 then enter 18-Mar-2011 09:00:00.



7. When testing Systems that receive ADT only some of the “dummy” test used for testing may have an order number valued. If the test has a “PID/Order Mismatch” the order number must be removed.

To remove the order number from the study Select the Order Number button (1) then Select No Order.



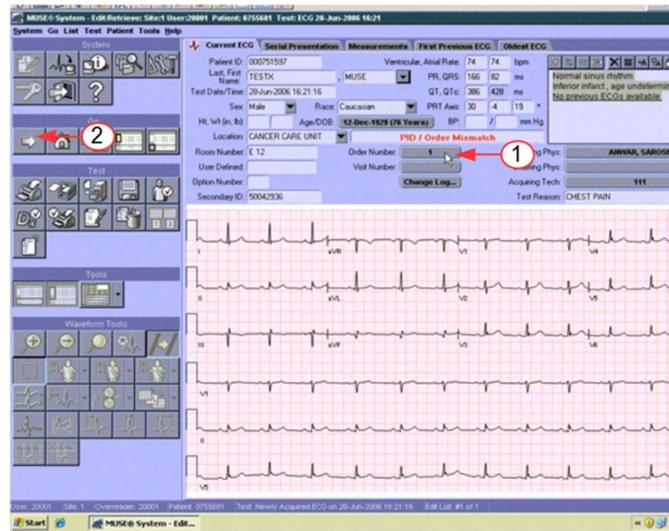
8. To attach the Visit number, select the **Visit Number** button (1). then Select the correct visit number from the list and Select OK.

Select the correct visit number from the list and click **OK**.

Once the visit is attached, then select the arrow icon (2) and save the updates as **Demographics Complete**. The updated study will be on the **Edit List** with the status **Demographics Complete**.

NOTE:

Attaching the **Visit Number** to the study is critical. If the PID/MRN is all that is attached to the study before it is sent to the HIS/EMR system, then none of the Visit information will be included on the HL7 result transaction. Visit information includes account number, visit number, attending doctor, location, etc. that is minimally required by most HIS/EMR systems to post a result.



Testing Results on MUSE System with Inbound HL7 ADT and Order Interfaces

As you select scenarios and data to test, you may want to also test "what-if" scenarios. For example, even though you have an ADT interface, what happens if the users don't attach a Visit prior to sending a preliminary or final result.

Use these steps to test result messages on systems with inbound HL7 ADT and Order interfaces.

1. Work with your GE Healthcare HL7 engineer to ensure that report distribution is set up to automatically transmit a preliminary HL7 result report for demographics complete and final EKG.
2. Work with your hospital's HL7 engineer and HIS system analyst to have several test patients registered on your HIS test system.
3. Open a newly acquired EKG on the **Edit List** using the **Tests by Date/Time** preset. To send test HL7 Results to the MUSE system, use the instructions in "[How to Send Test HL7 Results from the MUSE System \(with Inbound HL7 ADT Interface\)](#)" on page 111.
4. Revise **Test Date/Time** to reflect the date/time you are performing the test.

5. Type the medical record number for one of the active test patients registered in step 2.

Update the patient name to resolve the mismatch. Click on the visit number field and select a visit. Save as **Demographics Complete** to edit list.

6. Verify that a Result Report with a Preliminary Status was successfully received and processed by your HIS/EMR system.

NOTE:

If you will not be sending preliminary results to your HIS/EMR, skip steps 5 and 6.

7. Log on to the MUSE system using the test doctor credentials.
8. Select (highlight) the Preliminary EKG study from step 5 on the **Edit List** using the **Tests by Date/Time** preset and select the **Confirm and Route** icon from the **Edit List** tool bar (be sure to select the icon with the check mark next to it, or from the menu, select Test, Save, Confirm, or Route).
9. Verify that a Result Report with a Final Status was successfully received and processed by your HIS/EMR system.

NOTE:

The MUSE system can send discrete text results, summary text results, UUEncoded waveform results, and URL link pointing to specific results on MUSE Web or CV Web in the result message depending on option purchased. When validating the result transactions, verify that each component that you are expecting in the ORU (result) message updates your HIS/EMR correctly.

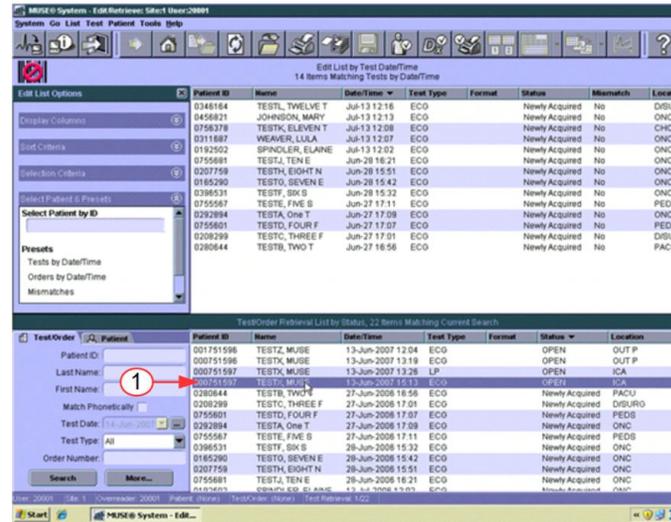
10. Log on to MUSE using test doctor credentials.
11. Select (highlight) the Final (Confirmed) EKG study from step 8 from the Test Retrieval List. Open the confirmed study and type `testing corrected report` in the interpretation section. Select the **Confirm and Route** icon from the Edit List tool bar instructions.
12. Verify that a Result Report with a Corrected or Amended Status was successfully received and processed by your HIS/EMR system.
13. Following steps 1 through 12, continue testing for each MUSE site and test result type (EKG, HiRes, Holter, and Stress) that you will be sending from the MUSE system to your HIS/EMR.

NOTE:

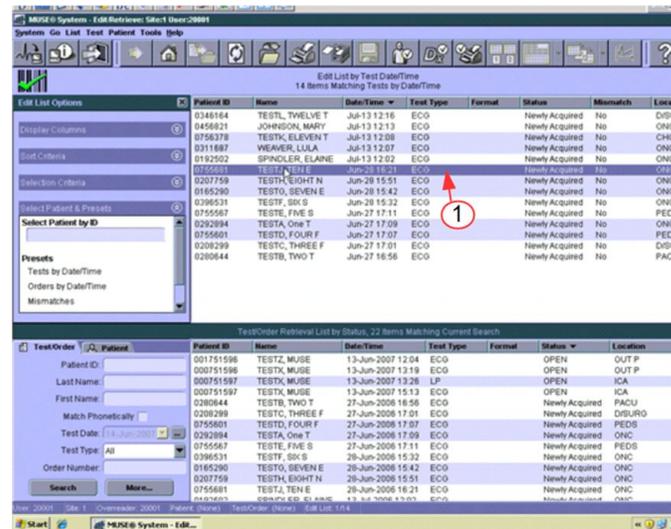
MUSE does not send out HL7 Order Status Update messages. Some customers use the ORU (Result) message to create an Order Status Update message on their interface engine to send to their HIS Ordering system. You will need to include this in your customized test plans if this is a part of your hospital's workflow.

How to Send Test HL7 Results from MUSE System (Inbound HL7 ADT and Order Interfaces)

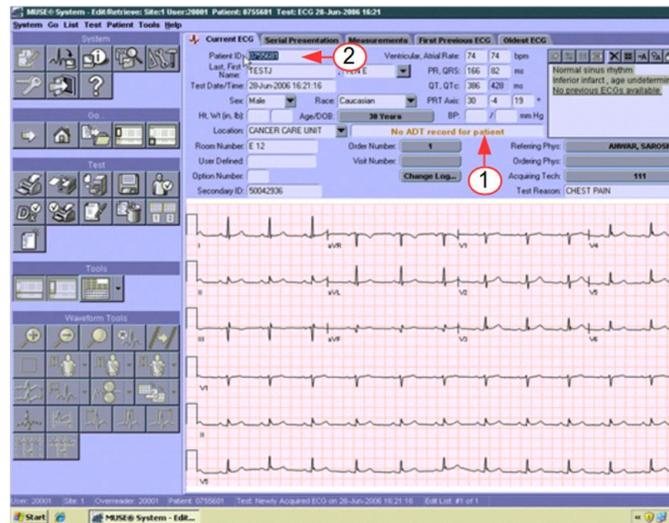
- To attach an Open order to a test on the **Edit List**, first note the PID/MRN (1) of the Open order in the MUSE system.



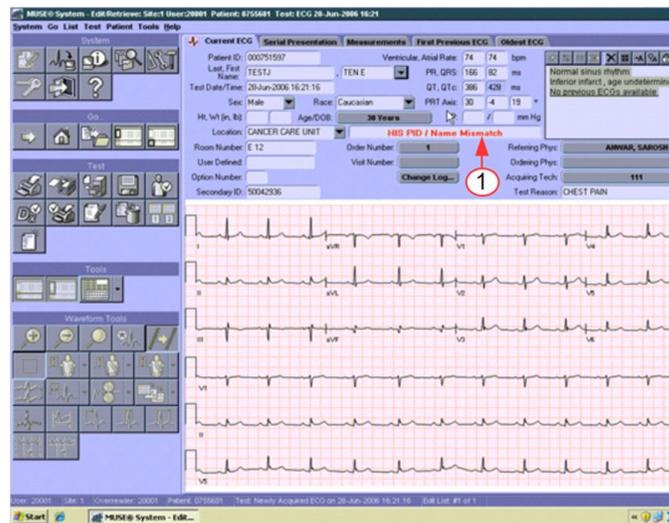
- Open a **Newly Acquired** test (1) from the **Edit List**.



- Note that there is no Mismatch on this test as it has the “No ADT record for patient notification message.” (1)
Highlight the PID/MRN (2) on the test and enter the PID/MRN.



- With the PID/MRN entered, the test now has a “HIS PID/Name Mismatch.” (1)



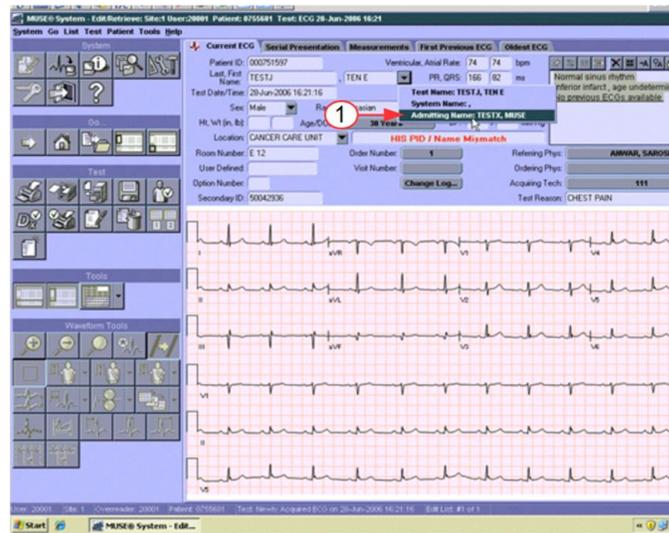
- Correct this Mismatch by selecting the drop-down arrow next to the patient name and select the “Admitting Name” (1).

The Admitting Name is the name in the HIS database that matches the PID/MRN that you entered.

The “dummy” test used for this example had an **Order Number** associated with it.

After correcting the HIS PID/Name Mismatch that there is a now a PID/Order Mismatch (1). If no order is associated with the study then “No Mismatch

Detected” will be valued. Before correcting the PID/Order Mismatch verify that the desired Test Date/Time is valued.



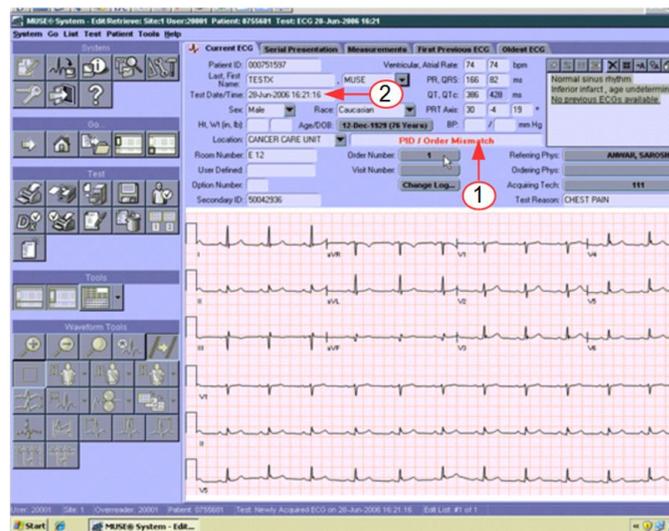
6. Check the **Test Date/Time**.

Many of the “dummy” tests that are entered on the system for testing have old Test Date/Times associated to them. The Test Date/Time needs to reflect the Date/Time of the Order that you are going to attach.

To change the Test Date/Time highlight the Date/Time and enter desired Date/Time (2).

NOTE:

The date time format must be entered in the required format. If the you want the Date/Time to be March 18, 2011 at 0900 then enter 18-Mar-2011 09:00:00.

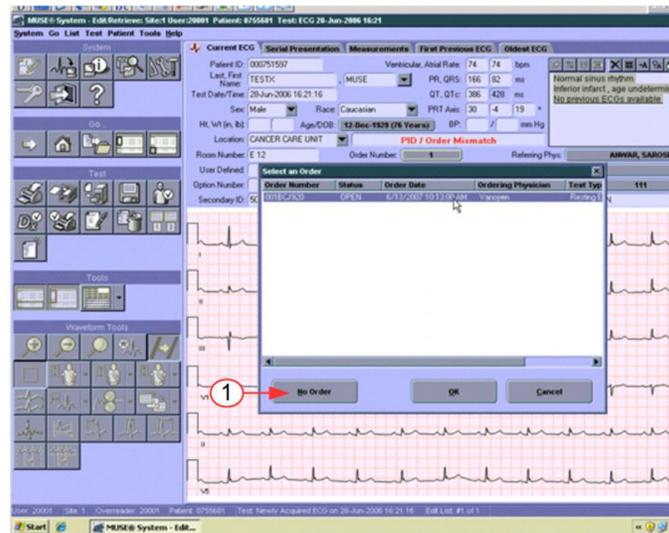


7. If the test has a "PID/Order Mismatch" (1) which means that the PID/MRN does not have the order indicated on the Order Number button, the incorrect order number must be removed and replaced with the correct order number.

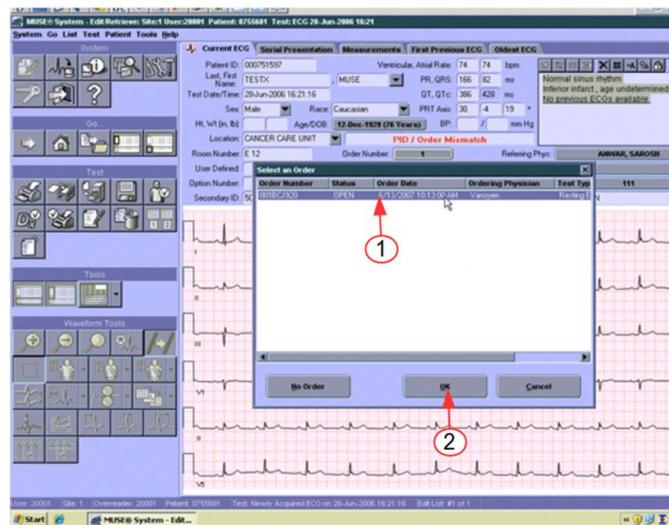
Select the **Order Number** button (2).

8. The **Select an Order** window opens.

To remove the incorrect Order from the test, select the **No Order** button (1).



9. To attach an Order to the Test, highlight the appropriate order (1), and click **OK** (2).



10. Verify that the test has been updated with the order details.

The **Order Number**, **Visit Number**, and **Ordering Physician** should match the information on the Order.

NOTE:

The Mismatch status bar reads "No Mismatch Detected".

Select the arrow icon (1) and save the updates as **Demographics Complete**. The updated study will be on the **Edit List** with the status **Demographics Complete**.

Testing Financial Transactions

The purpose of this section is to test the MUSE HL7 Financial interface to ensure successful transmission and processing of financial messages. It is strongly recommended that a technical and or professional billing staff member from your hospital view the financial messages that post to your technical and or professional billing systems. The hospital is responsible for ensuring that all data required by each of the financial billing systems is included on the billing transactions. The hospital billing staff member must verify that a charge successfully posts to your technical and or professional billing system and that a bill can be generated based on the data sent in the posted charge.

Each of your technical and or professional billing systems that will be receiving billing transactions from MUSE will need to be tested. Each type of test (EKG, Stress, Holter and HiRes) that will have a billing message sent from MUSE will need to be tested.

Testing Financial Transactions on MUSE Systems

These procedures are for testing financial messages. Financial messages are typically generated when a result is confirmed. GE Healthcare strongly recommends not transmitting financial messages when the result is at a Newly Acquired status, because ADT and Order information required on the billing transaction has not been validated and in some cases may be missing entirely.

1. Work with your GE Healthcare HL7 Engineer to ensure that each MUSE site that will be sending financial transactions are configured to send billing either on demographics complete state or final state.
2. Work with your hospital's HL7 engineer and HIS system analyst to have several test patients registered on your HIS test system.
3. Open a newly acquired EKG on the **Edit List** using the Tests by Date/Time preset.
4. Revise **Test Date/Time** to reflect the date/time you are performing the test.
5. Enter the medical record number for one of the active test patients registered in step 2.

Update the **Patient Name** to resolve the mismatch. Click on the **Order Number** field and select appropriate **Open Order**.

6. Save exam as **Demographics Complete** to **Edit List**.
7. If generating charges prior to final read (**Demographics Complete**), verify that a Financial Transaction Report was successfully received and processed by your technical and professional billing systems.
8. If generating charges on final reads, log on to the MUSE system using test doctor credentials.

Select (highlight) the Demographics Complete EKG study from step 6 on the **Edit List** using the Tests by Date/Time preset and select the **Confirm and Route** from the **Edit List** tool bar (be sure to select the icon with the checkmark next to it, or from the menu, select Test, Save, Confirm, or Route).

9. Verify that a Financial Transaction Report was successfully received and processed by your technical and professional billing systems.

NOTE:

Some professional billing systems have several checkpoints that a financial transaction passes through before a bill can be generated. It is the hospital's responsibility to ensure that the message contains the information required to drop a bill.

10. Log on to the MUSE system using test doctor credentials.

Select (highlight) the Final (Confirmed) EKG study from step 8 from the **Test Retrieval List**. Open the confirmed study and type `testing corrected report` in the interpretation section.

Select the printer icon from the Edit List tool bar (be sure to select the printer icon with the checkmark next to it)

11. Verify that a Duplicate Financial transaction is not sent when the Result Report was re-confirmed.
12. Continue testing steps 1 through 11 for each MUSE site and test type (EKG, HiRes, Holter and Stress) that you will be sending a Financial Transaction for from the MUSE system to your technical and professional billing systems.

Testing Interface Transactions

For each of the following types of transactions, work with your GE Healthcare HL7 engineer to develop testing plans. Testing steps for each interface will vary depending on each customer's site specific setup:

- ADT Query Interface
- Batch Result Interface
- Batch Billing Interface

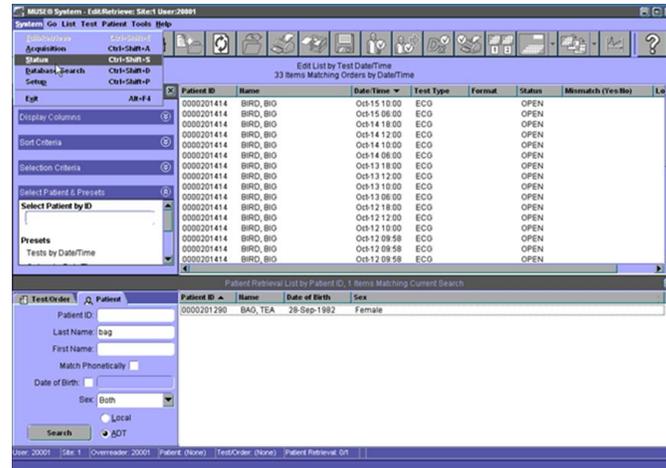
Monitoring HL7 Transactions on MUSE System

MUSE HIS Event Log

You can view the HIS Event Log to view transactions that were sent to and from the MUSE system to the MUSE interface.

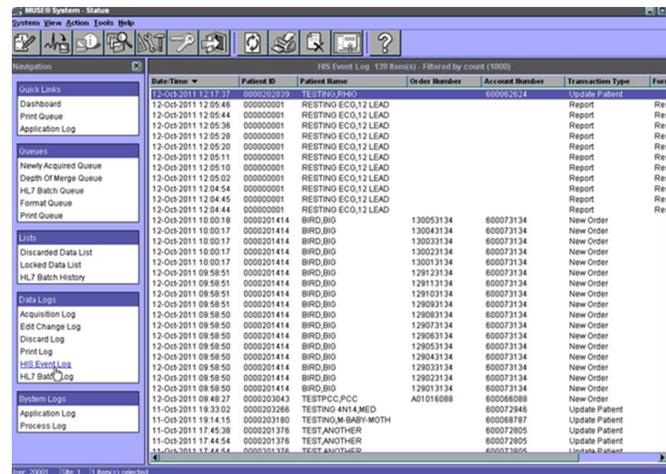
Additionally, you can filter the log to view specific transactions. For more information about filtering transactions, refer to *MUSE v9 Cardiology Information System Operator's Manual*.

1. Go to **System > Status**



2. Select the **HIS Event Log** in the left navigation panel, (or from the menu, **View > HIS Event Log**).

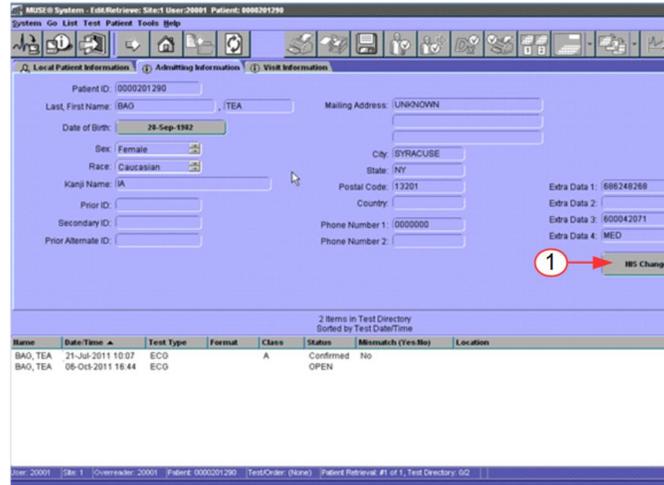
You can see all inbound and outbound transactions from MUSE to the MUSE interface and their status.



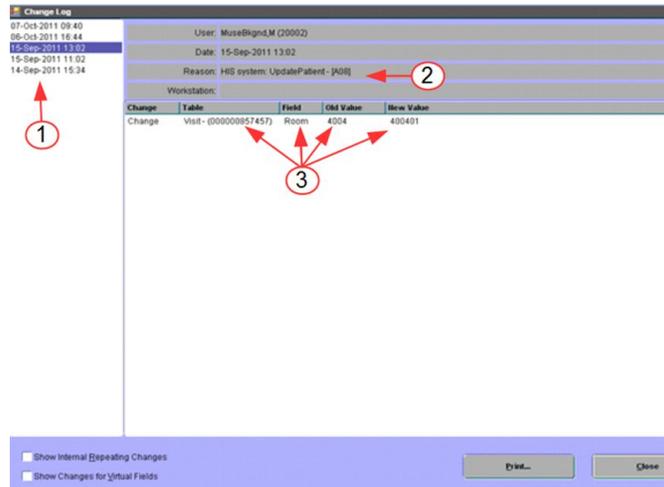
MUSE HIS Change Log

The **HIS Change Log** on the **Admitting Information** screen contains a list by date and time of all HL7 transactions that were received and updated data for a patient.

1. Go to the **Admitting Information** tab.
2. To view the log, click on **HIS Change Log**.



3. The date/time ADT and Order transactions that were received for the patient are displayed in the left side of the screen (1). The type of HL7 transaction that updated the patient information is listed at the top next to **Reason** (2). The MUSE table that was updated, the field name, the old value, and the new value are listed in the center of the screen (3).





Abbreviations In Manual

Abbreviation List

A	
Addr, AD	address
ADT	Admit/Discharge/Transfer
ASCII	American Standard Code for Information Interchange
ADD	Addendum
B	
BBS	Bulletin Board Service
C	
CE	coded entry
CHAR	character
Chg	change
CM	composite
CN	composite name
CQ	composite quantity with units
CV	cardiovascular
D	
DIS	Diagnostic Imaging System
DT	date
DSC	Continuation Pointer
E	
ECG, EKG	electrocardiogram
EVN	Event Type
F	
FTP	File Transfer Protocol

FAQs	Frequently Asked Questions
G	
GE	General Electric Company
H	
HL7	Health Level Seven Standard Interface
HIS	Hospital Information System
I	
ID	identification
IS	Information Systems
K	
1K	1024
L	
Lic	license
M	
MUSE	Marquette Universal System for Electrocardiography
MRG	Merge Patient Information
MSH	Message Header Segment
MSA	Message Acknowledgment
N	
N	no
NM	numeric
Num	number
O	
OBR	observation request
Obs	observation
OBX	observation result
O	optional
ORC	Common Order
P	
PN	part number, person name
PID	Patient Identification
PV1	Patient Visit
Q	
QRD	Query Definition
QRF	Query Filter
R	

Req	request
Req. Field	required field
Rev	revision
RIS	Radiological Information System
Rpt	report
S	
Seq	sequence
ST	string data
T	
TCP/IP	Transmission Control Protocol/Internet Protocol
TN	telephone number
TS	time stamp
U	
U	unknown
Y	
Y/O	yes/optional
Y/R	yes/required
Y	yes
Z	
ZPS	custom post script
ZSTRING	null terminated string



OBX Code Tables

OBX Observation Code Tables

The following tables provide the possible OBX measurement data available to send from the MUSE system in an HL7 ORU result message. Each of the four MUSE study types has its own set of values, identified by a code and then a description.

ECG OBX Codes

MUSE Code	Code Description
204	Diagnosis Class
550	Systolic Blood Pressure
551	Diastolic Blood Pressure
552	Ventricular Rate EKG/Min
553	Atrial Rate
554	PR-Interval (MSEC)
555	QRS-Interval (MSEC)
556	QT-Interval (MSEC)
557	QTc
568	P Axis
569	R Axis
570	T axis

HiRes OBX Codes

MUSE Code	Code Description
503	Std. QRS Duration (unfiltered)
505	Total QRS Duration (unfiltered)
502	Number of Beats Averaged
501	Number of Beats detected
514	Duration of HFLA Signals <40 μ v>

HiRes OBX Codes (cont'd.)

MUSE Code	Code Description
508	RMS Voltage in terminal
511	Mean voltage in terminal

Stress OBX Codes

MUSE Code	Code Description
204	Diagnosis Class
903	Acquisition Device
601	Protocol Name
607	High End Filter (Hz)
608	Low End Filter (1/100Hz)
609	Max Work Load (METS*10)
610	Time In Exercise Phase
611	Max. Systolic BP
612	Max Diastolic BP
613	Max Heart Rate
614	Max Predicted Heart Rate
13482	Exer Nurse
13483	Exer Nurse Text
13484	Attending Physician
13486	Additional Personnel
13497	Known Cardiac Condition
13952	Reason For Termination
13507	Reason for Test
13527	Standing BP
13529	Sitting BP
13531	Supine BP
13532	Supine DBP
13533	Resting BP Summary Comment
13535	ECG Rhythm Before Ex
13537	ECG Conduction Before Ex
13539	ECG ST/T Waves Before Ex
13544	Target HR Formula
13546	Stress Protocol
13493	C-Reactive Protein Value
13550	Rest HR

Stress OBX Codes (cont'd.)

MUSE Code	Code Description
13551	Rest BP
13553	Rest RPP
13554	Rest CO
13555	Rest VE
13556	Rest VO2 Uptake
13557	Rest PE
13558	Rest Resp Rate
13559	Rest SPO2
13560	PeakEx RPP
13561	PeakEx CO
13562	PeakEx VE
13563	PeakEx VO2 Uptake
13564	PeakEx PE
13565	PeakEx Resp Rate
13566	PeakEx SPO2
13567	PeakEx METs
13579	Arrhy Before Ex (OLD)
13590	Arrhythmias
13601	Arrhy After Ex (OLD)
13614	Resting ECG
13625	ST Changes
13636	Recovery ECG Response (OLD)
13649	Duke Angina Index
13650	Duke TM ST Dev
13651	Duke Treadmill Score
13652	Duke TM Score Result
13655	Overall Impression
13663	Chest Pain
13969	HR Response To Exercise
13974	BP Response To Exercise
13979	Functional Capacity
13981	Patient disposition
13993	Ergometer Units
13994	Treadmill Speed Units
13995	Dosage Units

Stress OBX Codes (cont'd.)

MUSE Code	Code Description
13514	PTCAOnLAD Date
13515	PTCAOnRCA Date
13516	PTCAOnCx Date
13517	CABGOnLAD Date
13518	CABGOnRCA Date
13519	CABGOnCx Date
13520	PTCAOnLAD
13521	PTCAOnRCA
13522	PTCAOnCx
13523	CABGOnLAD
13524	CABGOnRCA
13525	CABGOnCx
14005	Modality
13569	Rest to Peak Delta HR
13570	Rest to Peak Delta Systolic BP
13571	Rest to Peak Delta Diastolic BP
13572	Rest to Peak Delta RPP
13573	Rest to Peak Delta CO
13574	Rest to Peak Delta VE Count
13575	Rest to Peak Delta VO2 Uptake
13576	Rest to Peak Delta PE
13577	Rest to Peak Delta Resp. Rate
13578	Rest to Peak Delta SPO2
13753	Max ST Occurred In Exercise
13754	Max ST Occurred In Recovery
13759	Target HR Reached
13760	Recovery One Min RPP
13761	Recovery Three Min RPP
13762	Final RPP
13765	Final HR
13766	Final Systolic BP
13767	Final Diastolic BP
13769	Recovery One Min HR
13770	Recovery One Min Delta HR
13771	Recovery One Min Systolic BP

Stress OBX Codes (cont'd.)

MUSE Code	Code Description
13772	Recovery One Min Delta Systolic BP
13773	Recovery One Min Diastolic BP
13774	Recovery Three Min HR
13775	Recovery Three Min Delta HR
13776	Recovery Three Min Systolic BP
13777	Recovery Three Min Delta Systolic BP
13778	Recovery Three Min Diastolic BP
13783	HR at Max ST
13784	Systolic BP at Max ST
13785	Diastolic BP at Max ST
13667	RPP at Max ST
13789	Peak to Rest Systolic BP Ratio
13790	Peak to Rest HR Ratio
13791	Peak to Rest RPP Ratio
13934	Worst ST Depression Lead
13937	Aux Lead 1
13938	Aux Lead 2
13939	Aux Lead 3
13940	Aux Lead 4
13941	Aux Lead 5
13942	Aux Lead 6
13943	Aux Lead 7
13944	Aux Lead 8
13947	PE Scale Used
615	% of Max Predicted HR
14006	PeakEx HR
14007	PeakEx Systolic BP
14008	PeakEx Diastolic BP
13494	Test Type Label
14012	PeakEx % of Max Predicted HR

Holter OBX Codes

MUSE Code	Code Description
909	Hookup Date
910	Hookup Time

Holter OBX Codes (cont'd.)

MUSE Code	Code Description
2302	Record Duration
2304	# of QRS Complexes
2309	# of Ventricular Ectopics
2311	# of Ventricular isolated beats
2312	# of Ventricular Bigeminal
2313	# of Ventricular Couplets
2314	# of Ventricular Runs
2315	# of Ventricular Beats in Runs
2318	# of longest Ventricular beats
2317	Longest Ventricular Rate
2323	# of Fastest Ventricular Beats
2322	Fastest Ventricular Rate
2310	# of Supraventricular Ectopics
2326	# of Supraventricular Isolated
2328	# of Supraventricular Runs
2327	# of Supraventricular Couplets
2329	# of Supraventricular Beats in Runs
2332	# of Longest Supraventricular
2331	Longest Supraventricular Rate
2337	Fastest Supraventricular Rate
2378	Avg Heart Rate
2345	Max Heart Rate
2341	Min Heart Rate
2375	Longest RR
2346	Max Heart Rate Time/Date
2342	Min Heart Rate Time/Date
2376	Longest RR Date/Time
2349	Max ST Level Channel 1
2351	Max ST Level Channel 1 Date/Time
2350	Min ST Level Channel 1
2353	Min ST Level Channel 1 Date/Time
2356	Max ST Level Channel 2
2358	Max ST Level Channel 2 Date/Time
2357	Min ST Level Channel 2

Holter OBX Codes (cont'd.)

MUSE Code	Code Description
2360	Min ST Level Channel 2 Date/Time
2363	Max ST Level Channel 3
2365	Max ST Level Channel 3 Date/Time
2364	Min ST Level Channel 3
2367	Min ST Level Channel 3 Date/Time



Waveform Processing Rules

Encoding and Encryption

Since HL7 does not support the transfer of binary data, the waveform image in the HL7 file is UUEncoded. UUEncoding is a method that transforms binary data into ASCII characters. The one exception to this is a waveform image in Postscript format. Postscript does not contain binary data. The component of the Z segment that contains the image data will be Level 2 Postscript information and requires no decoding.

All of the waveform images are also “encrypted” using the standard HL7 escape sequences. HL7 mandates that all the characters in a message are printable characters. The HL7 escape characters allow non-printable characters to be sent in the messages. The HL7 escape characters are also used if any of the data contains the HL7 encoding characters.

Due to the UUEncoding and “encrypting” of the waveform image, the following steps are required to extract the image from the HL7 file:

1. Process the image data and remove all HL7 escape character sequences.
2. UUDecode the image.

Below is a brief explanation on the encryption used for the Z segment UUencoded waveforms. These rules would need to be reversed to decrypt the segment.

The rules for using Escape sequences are as follows:

(Assuming the HL7 Escape Character is '\ ' if not substitute the correct character into the examples)

Encryption Rules

If the data contains thetranslate to...
HL7 Field Character	"\F"
HL7 Component Character	"\S"
HL7 Subcomponent Character	"\T"
HL7 Repetition Character	"\R"
HL7 Escape Character	"\E"
Contains a Nonprintable Character	"\X0D\"

Multiple escape sequences would simply be multiples of the above rules. An example is a carriage return, line feed sequence, which would be "\X0D\X0A\" or the HL7 field and HL7 component characters in sequence would be "\F\S\"

Decryption

Decrypting waveforms works backwards

Decryption Rules

The Character...	...must be replaced by...
\F\	the printable field separator (usually)
\S\	the printable component separator (usually ^)
\T\	the printable subcomponent separator (usually &)
\R\	the printable repetition separator (usually ~)
\E\	the printable escape character (usually 0x5c, or \)
\Xdd\	the nonprintable control character it represents. For example: \X0A\ must be replaced by a 0A (Line Feed) \X0D\ must be replaced by a 0D (Carriage Return)

The replacements need to be performed on the entire actual waveform and cannot be performed using pattern recognition. The decoding of the data should be performed by reading each character and then decoding the sequences as they occur.

The waveform data begins in the third component of the waveform field.

Below is an example of the Z segment and the waveform component structure:

ZPD|1|PDF|97991^80501^begin 644 WAV.DAT\X0D\X0A\M)5...

ZPD 3.1 - size in bytes of the waveform prior to decryption and uudecoding

ZPD 3.2 - size in bytes of the waveform after decryption and prior to decoding

ZPD 3.3 - waveform data

Following is a small sample of the waveform data before and after the decoding process.

HL7 Encoded Data

```
begin 644 WAV.DAT\X0D\X0A\M)5!$1BTQ+C'*)>+CS]/H'B'@-
2'P(\T)B:CP\E+U1Y<\T4@+T-
A=\T%L;V<@+U1A\X0D\X0A\M9V5S(#$@,"12('/=71L:6YE<R'R(#@4CX\S'96Y
D;V)J'B'@-B'P(\T)B:
```

HL7 Decoded Data

```
begin 644 WAV.DAT
M)5!$1BTQ+C'*)>+CS]/H'B'@-2'P(&]B:CP+U1Y<&4@+T-A=&%L;V<@+U1A
M9V5S(#$@,"12('/=71L:6YE<R'R(#@4CX'^96YD;V)J'B'@-B'P(&]B:
```



ADT Test Plan Templates

Introduction

The series of test plan templates presented in this section are designed to be a guide or starting point for you to use as you develop the test plans for your hospital. You need to review and revise the testing information presented here to meet your hospital's workflow and data exchange requirements.

The templates for ADT testing are divided into four sets:

- [“ADT Transactions for Adding Patient Data ” on page 140](#)
- [“ADT Transactions for Changing Patient Data” on page 155](#)
- [“ADT Transactions for Deleting Patient Data ” on page 163](#)

If you choose to use the test plan templates in this document, first read [Chapter 9 “HL7 Interface Testing” on page 91](#). The document contains valuable information to consider when developing and customizing your test plans. It also contains instructions on how to validate the data fields that are sent from your hospital information system (HIS) to the MUSE system. Keep the document handy as you will want to refer to it during testing.

The HL7 Message and Event Types that are supported by the MUSE v9 system are listed below. To ensure that the MUSE v9 database is updated as expected by the HL7 messages sent from your HIS, each HL7 Message and Event type that you will be sending to the MUSE system needs to be tested. Each Test Type Result and Billing message that will be updating your HIS also need to be tested.

NOTE:

To ensure the test mirrors production as closely as possible, it is strongly suggested that your hospital's registration staff perform the registration functions on your HIS for testing. Likewise, clinical or clerical staff that routinely enters orders for the tests supported on MUSE should perform the order functions on your HIS for testing. For testing purposes, confirm that all fields that are to be sent to MUSE are populated (such as, phone number, order comments, referring physician etc.).

When validating results sent from the MUSE system to your HIS, be sure to have clinicians (nurses, physicians, etc.), who will be viewing the results in production, validate that the result posted to the EMR contains the data from the result report on the MUSE system that they are expecting to view.

When validating billing sent from the MUSE system to your HIS, have the staff from your hospital and technical billing areas validate that the charges post are as expected and contain all data required to create an invoice.

The following table contains the information that you will be capturing for each test:

Type of Information to Record	Description
Pass/Fail/NA	Record one of the following valid values for the test: <ul style="list-style-type: none"> • PASS Indicates that the data field on the MUSE system contains the expected value. • FAIL Indicates that the data field on the MUSE system does not contain the expected value. The field could also be empty. • NA Indicates that a value for this data field was not or will not be sent from your HIS system.
Comments	Record any comments about the test results. Especially, capture any comments that can help clarify if a test did not pass.
Validated by	Record the name and role of the person who is validating that each data field is populated during the test. Also, record the date the validation was completed. For example, Molly Brown, HL7 Engineer, 15 December 2015.

ADT Transactions for Adding Patient Data

The following test templates are designed to support testing of ADT transactions for adding patient data. The test templates are for the following HL7 event types:

- [“A01 – Admit Patient” on page 140](#)
- [“A04 – Register Outpatient” on page 142](#)
- [“A04 – Register Emergency Patient” on page 144](#)
- [“A10 – Patient Arriving” on page 146](#)
- [“A13 – Cancel Patient Discharge” on page 148](#)
- [“A05 – Pre-Admit Inpatient” on page 150](#)
- [“A05 – Pre-Admit Outpatient” on page 152](#)

A01 – Admit Patient

Use the following table templates to build and customize your own tables to collect test results for messages and event types sent between your hospital information system and the MUSE system.

A01 – Admit Patient on MUSE Admitting Information Screen (Test 1A)

MUSE Field	Pass/Fail/NA	Comments
Patient ID		
Last, First Name		

A01 – Admit Patient on MUSE Admitting Information Screen (Test 1A) (cont'd.)

MUSE Field	Pass/Fail/NA	Comments
Date of Birth		
Sex		
Race		
Kanji Name		
Prior ID		
Alternate ID		
Prior Alternate ID		
Mailing Address (first line)		
Mailing Address (second line)		
City		
State		
Postal Code		
Country		
Phone Number 1		
Phone Number 2		
Admit Extra Data 1		
Admit Extra Data 2		
Admit Extra Data 3		
Admit Extra Data 4		
Validated By: Name: Role: Date:		

A01 – Admit Patient on MUSE Visit Information Screen (Test 1B)

MUSE Field	Pass/Fail/NA	Comments
Account Number		
Visit Number		
Admit Date		
Discharge Date		
Status		
Referring MD Name		
Referring MD HIS ID		

A01 – Admit Patient on MUSE Visit Information Screen (Test 1B) (cont'd.)

MUSE Field	Pass/Fail/NA	Comments
Admitting MD Name		
Admitting MD HIS ID		
Attending MD Name		
Attending MD HIS ID		
Consulting MD Name		
Consulting MD HIS ID		
Primary Care MD Name		
Primary Care MD HIS ID		
Patient Location		
Room, Bed		
Admit Diagnosi:		
Primary Diagnosis		
Secondary Diagnosis		
Tertiary Diagnosis		
Visit Extra Data 1		
Visit Extra Data 2		
Visit Extra Data 3		
Visit Extra Data 4		
Patient Class		
Ambulatory Status		
Service Facility		
Discharge Disposition		
Hospital Service		
Admission Type		
Admission Source		
Validated By: Name: Role: Date:		

A04 – Register Outpatient

Use the following table templates to build and customize your own tables to collect test results for messages and event types sent between your hospital information system and the MUSE system.

A04 – Register Outpatient on MUSE Admitting Information Screen (Test 2A)

MUSE Field	Pass/Fail/NA	Comments
Patient ID		
Last, First Name:		
Date of Birth		
Sex		
Race		
Kanji Name		
Prior ID		
Alternate ID		
Prior Alternate ID		
Mailing Address (first line)		
Mailing Address (second line)		
City		
State		
Postal Code		
Country		
Phone Number 1		
Phone Number 2		
Admit Extra Data 1		
Admit Extra Data 2		
Admit Extra Data 3		
Admit Extra Data 4		
Validated By:		
Name:		
Role:		
Date:		

A04 – Register Outpatient on MUSE Visit Information Screen (Test 2B)

MUSE Field	Pass/Fail/NA	Comments
Account Number		
Visit Number		
Admit Date		
Discharge Date		
Status		
Referring MD Name		

A04 – Register Outpatient on MUSE Visit Information Screen (Test 2B) (cont'd.)

MUSE Field	Pass/Fail/NA	Comments
Referring MD HIS ID		
Admitting MD Name		
Admitting MD HIS ID		
Attending MD Name		
Attending MD HIS ID		
Consulting MD Name		
Consulting MD HIS ID		
Primary Care MD Name		
Primary Care MD HIS ID		
Patient Location		
Room, Bed		
Admit Diagnosis		
Primary Diagnosis		
Secondary Diagnosis		
Tertiary Diagnosis		
Visit Extra Data 1		
Visit Extra Data 2		
Visit Extra Data 3		
Visit Extra Data 4		
Patient Class:		
Ambulatory Status		
Service Facility		
Discharge Disposition		
Hospital Service:		
Admission Type		
Admission Source:		
Validated By: Name: Role: Date:		

A04 – Register Emergency Patient

Use the following table templates to build and customize your own tables to collect test results for messages and event types sent between your hospital information system and the MUSE system.

A04 – Register Emergency Patient on MUSE Admitting Information Screen (Test 3A)

MUSE Field	Pass/Fail/NA	Comments
Patient ID:		
Last, First Name:		
Date of Birth:		
Sex:		
Race:		
Kanji Name:		
Prior ID:		
Alternate ID:		
Prior Alternate ID:		
Mailing Address (first line):		
Mailing Address (second line):		
City:		
State:		
Postal Code:		
Country:		
Phone Number 1:		
Phone Number 2:		
Admit Extra Data 1:		
Admit Extra Data 2:		
Admit Extra Data 3:		
Admit Extra Data 4:		
Validated By: Name: Role: Date:		

A04 – Register Emergency Patient on MUSE Visit Information Screen (Test 3B)

MUSE Field	Pass/Fail/NA	Comments
Account Number		
Visit Number		
Admit Date		
Discharge Date		
Status		
Referring MD Name		

A04 – Register Emergency Patient on MUSE Visit Information Screen (Test 3B) (cont'd.)

MUSE Field	Pass/Fail/NA	Comments
Referring MD HIS ID		
Admitting MD Name		
Admitting MD HIS ID		
Attending MD Name		
Attending MD HIS ID		
Consulting MD Name		
Consulting MD HIS ID		
Primary Care MD Name		
Primary Care MD HIS ID		
Patient Location		
Room, Bed		
Admit Diagnosis		
Primary Diagnosis		
Secondary Diagnosis		
Tertiary Diagnosis		
Visit Extra Data 1		
Visit Extra Data 2		
Visit Extra Data 3		
Visit Extra Data 4		
Patient Class		
Ambulatory Status		
Service Facility		
Discharge Disposition		
Hospital Service		
Admission Type		
Admission Source		
Validated By: Name: Role: Date:		

A10 – Patient Arriving

Use the following table templates to build and customize your own tables to collect test results for messages and event types sent between your hospital information system and the MUSE system.

A10 – Patient Arriving on MUSE Admitting Information Screen (Test 4A)

MUSE Field	Pass/Fail/NA	Comments
Patient ID		
Last, First Name		
Date of Birth		
Sex		
Race		
Kanji Name		
Prior ID		
Alternate ID		
Prior Alternate ID		
Mailing Address (first line)		
Mailing Address (second line)		
City		
State		
Postal Code		
Country		
Phone Number 1		
Phone Number 2		
Admit Extra Data 1		
Admit Extra Data 2		
Admit Extra Data 3		
Admit Extra Data 4		
Validated By:		
Name:		
Role:		
Date:		

A10 – Patient Arriving on MUSE Visit Information Screen (Test 4B)

MUSE Field	Pass/Fail/NA	Comments
Account Number		
Visit Number		
Admit Date		
Discharge Date		
Status		
Referring MD Name		

A10 – Patient Arriving on MUSE Visit Information Screen (Test 4B) (cont'd.)

MUSE Field	Pass/Fail/NA	Comments
Referring MD HIS ID		
Admitting MD Name		
Admitting MD HIS ID		
Attending MD Name		
Attending MD HIS ID		
Consulting MD Name		
Consulting MD HIS ID		
Primary Care MD Name		
Primary Care MD HIS ID		
Patient Location		
Room, Bed		
Admit Diagnosis		
Primary Diagnosis		
Secondary Diagnosis		
Tertiary Diagnosis		
Visit Extra Data 1		
Visit Extra Data 2		
Visit Extra Data 3		
Visit Extra Data 4		
Patient Class		
Ambulatory Status		
Service Facility		
Discharge Disposition		
Hospital Service		
Admission Type		
Admission Source		
Validated By:		
Name:		
Role:		
Date:		

A13 – Cancel Patient Discharge

Use the following table templates to build and customize your own tables to collect test results for messages and event types sent between your hospital information system and the MUSE system.

A13 – Cancel Patient Discharge on MUSE Admitting Information Screen (Test 5A)

MUSE Field	Pass/Fail/NA	Comments
Patient ID		
Last, First Name		
Date of Birth		
Sex		
Race		
Kanji Name		
Prior ID		
Alternate ID		
Prior Alternate ID		
Mailing Address (first line)		
Mailing Address (second line)		
City		
State		
Postal Code		
Country		
Phone Number 1		
Phone Number 2		
Admit Extra Data 1		
Admit Extra Data 2		
Admit Extra Data 3		
Admit Extra Data 4		
Validated By:		
Name:		
Role:		
Date:		

A13 – Cancel Patient Discharge on MUSE Visit Information Screen (Test 5B)

MUSE Field	Pass/Fail/NA	Comments
Account Number		
Visit Number		
Admit Date		
Discharge Date		
Status		
Referring MD Name		

A13 – Cancel Patient Discharge on MUSE Visit Information Screen (Test 5B) (cont'd.)

MUSE Field	Pass/Fail/NA	Comments
Referring MD HIS ID		
Admitting MD Name		
Admitting MD HIS ID		
Attending MD Name		
Attending MD HIS ID		
Consulting MD Name		
Consulting MD HIS ID		
Primary Care MD Name		
Primary Care MD HIS ID		
Patient Location		
Room, Bed		
Admit Diagnosis		
Primary Diagnosis		
Secondary Diagnosis		
Tertiary Diagnosis		
Visit Extra Data 1		
Visit Extra Data 2		
Visit Extra Data 3		
Visit Extra Data 4		
Patient Class		
Ambulatory Status		
Service Facility		
Discharge Disposition		
Hospital Service		
Admission Type		
Admission Source		
Validated By:		
Name:		
Role:		
Date:		

A05 – Pre-Admit Inpatient

Use the following table templates to build and customize your own tables to collect test results for messages and event types sent between your hospital information system and the MUSE system.

A05 – Pre-Admit Inpatient on MUSE Admitting Information Screen (Test 6A)

MUSE Field	Pass/Fail/NA	Comments
Patient ID		
Last, First Name		
Date of Birth		
Sex		
Race		
Kanji Name		
Prior ID		
Alternate ID		
Prior Alternate ID		
Mailing Address (first line)		
Mailing Address (second line)		
City		
State		
Postal Code		
Country		
Phone Number 1		
Phone Number 2		
Admit Extra Data 1		
Admit Extra Data 2		
Admit Extra Data 3		
Admit Extra Data 4		
Validated By:		
Name:		
Role:		
Date:		

A05 – Pre-Admit Inpatient on MUSE Visit Information Screen (Test 6B)

MUSE Field	Pass/Fail/NA	Comments
Account Number		
Visit Number		
Admit Date		
Discharge Date		
Status		
Referring MD Name		

A05 – Pre-Admit Inpatient on MUSE Visit Information Screen (Test 6B) (cont'd.)

MUSE Field	Pass/Fail/NA	Comments
Referring MD HIS ID		
Admitting MD Name		
Admitting MD HIS ID		
Attending MD Name		
Attending MD HIS ID		
Consulting MD Name		
Consulting MD HIS ID		
Primary Care MD Name		
Primary Care MD HIS ID		
Patient Location		
Room, Bed		
Admit Diagnosis		
Primary Diagnosis		
Secondary Diagnosis		
Tertiary Diagnosis		
Visit Extra Data 1		
Visit Extra Data 2		
Visit Extra Data 3		
Visit Extra Data 4		
Patient Class		
Ambulatory Status		
Service Facility		
Discharge Disposition		
Hospital Service		
Admission Type		
Admission Source		
Validated By:		
Name:		
Role:		
Date:		

A05 – Pre-Admit Outpatient

Use the following table templates to build and customize your own tables to collect test results for messages and event types sent between your hospital information system and the MUSE system.

A05 – Pre-Admit Outpatient on MUSE Admitting Information Screen (Test 7A)

MUSE Field	Pass/Fail/NA	Comments
Patient ID		
Last, First Name		
Date of Birth		
Sex		
Race		
Kanji Name		
Prior ID		
Alternate ID		
Prior Alternate ID		
Mailing Address (first line)		
Mailing Address (second line)		
City		
State		
Postal Code		
Country		
Phone Number 1		
Phone Number 2		
Admit Extra Data 1		
Admit Extra Data 2		
Admit Extra Data 3		
Admit Extra Data 4		
Validated By:		
Name:		
Role:		
Date:		

A05 – Pre-Admit Inpatient on MUSE Visit Information Screen (Test 7B)

MUSE Field	Pass/Fail/NA	Comments
Account Number		
Visit Number		
Admit Date		
Discharge Date		
Status		
Referring MD Name		

A05 – Pre-Admit Inpatient on MUSE Visit Information Screen (Test 7B) (cont'd.)

MUSE Field	Pass/Fail/NA	Comments
Referring MD HIS ID		
Admitting MD Name		
Admitting MD HIS ID		
Attending MD Name		
Attending MD HIS ID		
Consulting MD Name		
Consulting MD HIS ID		
Primary Care MD Name		
Primary Care MD HIS ID		
Patient Location		
Room, Bed		
Admit Diagnosis		
Primary Diagnosis		
Secondary Diagnosis		
Tertiary Diagnosis		
Visit Extra Data 1		
Visit Extra Data 2		
Visit Extra Data 3		
Visit Extra Data 4		
Patient Class		
Ambulatory Status		
Service Facility		
Discharge Disposition		
Hospital Service		
Admission Type		
Admission Source		
Validated By:		
Name:		
Role:		
Date:		

ADT Transactions for Changing Patient Data

The following test templates are designed to support testing of ADT transactions for changing patient data. The test templates are for the following HL7 event types:

- “A08 – Update Patient Information – Change Date of Birth” on page 155
- “A08 – Update Patient Information – Change Race” on page 156
- “A08 – Update Patient Information – Change Sex” on page 156
- “A08 – Update Patient Information – Change Street Address” on page 157
- “A08 – Update Patient Information – Change Patient Name” on page 157
- “A08 – Update Admitting MD Name and HIS ID” on page 158
- “A02 – Transfer Patient Location” on page 159
- “A06 – Transfer Outpatient to Inpatient” on page 159
- “A07 – Transfer Inpatient to Outpatient” on page 160
- “A12 – Cancel Patient Transfer” on page 161
- “A17 – Swap Patient Locations” on page 161
- “A03 – Discharge Patient” on page 162
- “A09 – Patient Departing” on page 163

A08 – Update Patient Information – Change Date of Birth

Use the following table template to build and customize your own table to collect test results for messages and event types sent between your hospital information system and the MUSE system.

A08 – Update Patient Information: Change Date of Birth on MUSE Admitting Information Screen (Test 8)

MUSE Field	Pass/Fail/NA	Comments
Patient ID		
Last, First Name		
OLD Date of Birth: _____ NEW Date of Birth: _____		
Validated By: Name: Role: Date:		

A08 – Update Patient Information – Change Race

Use the following table template to build and customize your own table to collect test results for messages and event types sent between your hospital information system and the MUSE system.

NOTE:

Be sure to test each Race Code that you will be sending from your HIS to the MUSE system.

A08 – Update Patient Information: Change Race on MUSE Admitting Information Screen (Test 9)

MUSE Field	Pass/ Fail/NA	Comments
Patient ID		
Last, First Name		
OLD Race: _____ NEW Race: _____		
Validated By: Name: Role: Date:		

A08 – Update Patient Information – Change Sex

Use the following table template to build and customize your own table to collect test results for messages and event types sent between your hospital information system and the MUSE system.

NOTE:

Be sure to test each Gender Code that you will be sending from your hospital information system to the MUSE system.

A08 – Update Patient Information: Change Sex on MUSE Admitting Information Screen (Test 10)

MUSE Field	Pass/ Fail/NA	Comments
Patient ID:		
Last, First Name:		
OLD Sex: _____ NEW Sex: _____		

A08 – Update Patient Information: Change Sex on MUSE Admitting Information Screen (Test 10) (cont'd.)

MUSE Field	Pass/ Fail/NA	Comments
Validated By: Name: Role: Date:		

A08 – Update Patient Information – Change Street Address

Use the following table template to build and customize your own table to collect test results for messages and event types sent between your hospital information system and the MUSE system.

A08 – Update Patient Information: Change Street Address on MUSE Admitting Information Screen (Test 11)

MUSE Field	Pass/ Fail/NA	Comments
Patient ID:		
Last, First Name:		
OLD Mailing Address Line 1: _____ NEW Mailing Address Line 1: _____		
Validated By: Name: Role: Date:		

A08 – Update Patient Information – Change Patient Name

Use the following table template to build and customize your own table to collect test results for messages and event types sent between your hospital information system and the MUSE system.

A08 – Update Patient Information: Change Patient Name on MUSE Admitting Information Screen (Test 12)

MUSE Field	Pass/ Fail/NA	Comments
Patient ID		
OLD Last, First Name: _____ NEW Last, First Name: _____		
Validated By: Name: Role: Date:		

A08 – Update Admitting MD Name and HIS ID

Use the following table template to build and customize your own table to collect test results for messages and event types sent between your hospital information system and the MUSE system.

A08 – Update Admitting MD Name and HIS ID on MUSE Visit Information Screen (Test 13)

MUSE Field	Pass/ Fail/NA	Comments
Patient Account Number:		
Last, First Name:		
OLD Admitting MD Name: _____ OLD Admitting MD HIS ID: _____ NEW Admitting MD Name: _____ NEW Admitting MD HIS ID: _____		

A08 – Update Admitting MD Name and HIS ID on MUSE Visit Information Screen (Test 13) (cont'd.)

MUSE Field	Pass/ Fail/NA	Comments
Validated By: Name: Role: Date:		

A02 – Transfer Patient Location

Use the following table template to build and customize your own table to collect test results for messages and event types sent between your hospital information system and the MUSE system.

A02 – Transfer Patient Location on MUSE Visit Information Screen (Test 14)

MUSE Field	Pass/Fail/ NA	Comments
Patient Account Number:		
Last, First Name:		
OLD Patient Location: _____ NEW Patient Location: _____		
Validated By: Name: Role: Date:		

A06 – Transfer Outpatient to Inpatient

Use the following table template to build and customize your own table to collect test results for messages and event types sent between your hospital information system and the MUSE system.

A06 – Transfer Outpatient to Inpatient on MUSE Visit Information Screen (Test 15)

MUSE Field	Pass/Fail/ NA	Comments
Patient Account Number:		
Last, First Name:		
OLD Patient Location: _____		

A06 – Transfer Outpatient to Inpatient on MUSE Visit Information Screen (Test 15) (cont'd.)

MUSE Field	Pass/Fail/NA	Comments
NEW Patient Location: _____ OLD Patient Class: _____ NEW Patient Class: _____		
Validated By: Name: Role: Date:		

A07 – Transfer Inpatient to Outpatient

Use the following table template to build and customize your own table to collect test results for messages and event types sent between your hospital information system and the MUSE system.

A07 – Transfer Inpatient to Outpatient on MUSE Visit Information Screen (Test 16)

MUSE Field	Pass/Fail/NA	Comments
Patient Account Number:		
Last, First Name:		
OLD Patient Location: _____ NEW Patient Location: _____ OLD Patient Class: _____ NEW Patient Class: _____		
Validated By: Name: Role: Date:		

A12 – Cancel Patient Transfer

Use the following table template to build and customize your own table to collect test results for messages and event types sent between your hospital information system and the MUSE system.

A12 – Cancel Patient Transfer on MUSE Visit Information Screen (Test 17)

MUSE Field	Pass/Fail/NA	Comments
Patient Account Number:		
Last, First Name:		
OLD Patient Location: _____ NEW Patient Location: _____		
Validated By: Name: Role: Date:		

A17 – Swap Patient Locations

Use the following table template to build and customize your own table to collect test results for messages and event types sent between your hospital information system and the MUSE system.

A17 – Swap Patient Locations on MUSE Visit Information Screen (Test 18)

MUSE Field	Pass/Fail/NA	Comments
Patient A Patient Account Number:		
Patient B Patient Account Number:		
Patient A Last, First Name:		
Patient B Last, First Name:		

A17 – Swap Patient Locations on MUSE Visit Information Screen (Test 18) (cont'd.)

MUSE Field	Pass/Fail/NA	Comments
Patient A: OLD Patient Location: _____ NEW Patient Location: _____ Patient B: OLD Patient Class: _____ NEW Patient Class: _____		
Validated By: Name: Role: Date:		

A03 – Discharge Patient

Use the following table template to build and customize your own table to collect test results for messages and event types sent between your hospital information system and the MUSE system.

A03 – Discharge Patient on MUSE Visit Information Screen (Test 19)

MUSE Field	Pass/Fail/NA	Comments
Patient Account Number:		
Last, First Name:		
OLD Status: _____ NEW Status: _____ Discharge Date: _____		

A03 – Discharge Patient on MUSE Visit Information Screen (Test 19) (cont'd.)

MUSE Field	Pass/Fail/NA	Comments
Validated By: Name: Role: Date:		

A09 – Patient Departing

Use the following table template to build and customize your own table to collect test results for messages and event types sent between your hospital information system and the MUSE system.

A09 – Patient Departing on MUSE Visit Information Screen (Test 20)

MUSE Field	Pass/Fail/NA	Comments
Patient Account Number:		
Last, First Name:		
OLD Status: _____ NEW Status: _____ Discharge Date: _____		
Validated By: Name: Role: Date:		

ADT Transactions for Deleting Patient Data

The following test templates are designed to support testing of ADT transactions for deleting patient data. The test templates are for the following HL7 event types:

- [“TA11 – Cancel Patient Admit” on page 164](#)
- [“A23 – Delete Patient” on page 164](#)

TA11 – Cancel Patient Admit

Use the following table template to build and customize your own table to collect test results for messages and event types sent between your hospital information system and the MUSE system.

NOTE:

Before beginning your test, confirm that there are no pending or completed Orders or Results associated with the selected account. Also make certain you pick a test patient whose MUSE account is closed.

NOTE:

If the test patient does not have any pending or completed orders or results tied to the account that is canceled, the Encounter (Account and Visit) information will be deleted from the MUSE system upon cancellation of the patient admit.

A11 – Cancel Patient Admit on MUSE Visit Information Screen (Test 21)

MUSE Field	Pass/Fail/NA	Comments
Patient Account Number:		
Last, First Name:		
OLD Account Number: _____ NOTE: Verify that the test patient’s account and visit information is no longer listed on the patient’s Visit Information screen.		
Validated By: Name: Role: Date:		

A23 – Delete Patient

Use the following table template to build and customize your own table to collect test results for messages and event types sent between your hospital information system and the MUSE system.

NOTE:

Before beginning your test, confirm that there are no pending or completed Orders or Results associated with the selected account. Also make certain you pick a test patient whose MUSE account is closed.

NOTE:

If the test patient does not have any pending or completed orders or results tied to the account that is canceled, the Encounter (Account and Visit) information will be deleted from the MUSE system upon cancellation of the patient admit.

A23 – Delete Patient on MUSE Visit Information Screen (Test 22)

MUSE Field	Pass/Fail/NA	Comments
Patient Account Number:		
Last, First Name:		
OLD Account Number: _____ NOTE: Verify that the test patient’s account and visit information is no longer listed on the patient’s Visit Information screen.		
Validated By: Name: Role: Date:		



Order Test Plan Templates

Introduction

The information in this test plan template is designed to be a guide or starting point for you to use as you develop the test plans for your hospital. You need to review and revise the testing information presented here to meet your hospital's workflow and data exchange requirements.

The templates for testing orders are divided into the following sets:

- “New Orders ” on page 168
- “Change Orders” on page 174
- “Order Priority” on page 177
- “New EKG Orders with a Future Date” on page 179
- “Multiple Occurrence EKG Order” on page 179
- “Cancel EKG Order” on page 180
- “Discontinue EKG Order” on page 181

If you choose to use the test plan templates in this document, first read [Chapter 9 “HL7 Interface Testing” on page 91](#). The document contains valuable information to consider when developing and customizing your test plans. It also contains instructions on how to validate the data fields that are sent from your hospital information system (HIS) to the MUSE system. Keep the document handy as you will want to refer to it during testing.

The HL7 Message and Event Types that are supported by the MUSE v9 system are listed below. To ensure that the MUSE v9 database is updated as expected by the HL7 messages sent from your HIS, each HL7 Message and Event type that you will be sending to the MUSE system needs to be tested. Each Test Type Result and Billing messages that will be updating your HIS also need to be tested.

NOTE:

To ensure the test mirrors production as closely as possible, it is strongly suggested that your hospital's registration staff perform the registration functions on your HIS for testing. Likewise, clinical or clerical staff that routinely enters orders for the tests supported on MUSE should perform the order functions on your HIS for testing. For testing purposes, confirm that all fields that are to be sent to MUSE are populated (such as, phone number, order comments, referring physician etc.).

When validating results sent from the MUSE system to your HIS, be sure to have clinicians (nurses, physicians, etc.), who will be viewing the results in production, validate that the result posted to the EMR contains the data from the result report on the MUSE system that they are expecting to view.

When validating billing sent from the MUSE system to your HIS, have the staff from your hospital and technical billing areas validate that the charges post are as expected and contain all data required to create an invoice.

The following table contains the information that you will be capturing for each test:

Type of Information to Record	Description
Pass/Fail/NA	Record one of the following valid values for the test: <ul style="list-style-type: none"> • PASS Indicates that the data field on the MUSE system contains the expected value. • FAIL Indicates that the data field on the MUSE system does not contain the expected value. The field could also be empty. • NA Indicates that a value for this data field was not or will not be sent from your HIS system.
Comments	Record any comments about the test results. Especially, capture any comments that can help clarify if a test did not pass.
Validated by	Record the name and role of the person who is validating that each data field is populated during the test. Also, record the date the validation was completed. For example, Molly Brown, HL7 Engineer, 15 December 2015.

New Orders

The following links direct you to templates for the following HL7 order control codes:

- [“NW – New Order - EKG” on page 168](#)
- [“NW – New Order - Signal Averaged” on page 170](#)
- [“NW – New Order - Holter” on page 171](#)
- [“NW – New Order - Stress” on page 173](#)

NW – New Order - EKG

Use the following table template to build and customize your own table to collect test results for messages and event types sent between your HIS and the MUSE system.

NW – New Order – EKG on MUSE Order Information Screen (Test 1)

MUSE Field	Pass/Fail/NA	Comments
Patient ID		
Last, First Name		
Sex		

NW – New Order – EKG on MUSE Order Information Screen (Test 1) (cont'd.)

MUSE Field	Pass/Fail/ NA	Comments
Race		
HIS Disposition		
MUSE Location		
Patient Location		
Room		
Bed		
Test Type		
HIS Test Type		
Test Reason		
Comments		
Admitting Diagnosis		
Referring MD:		
MUSE ID		
HIS ID		
Ordering MD		
MUSE ID		
HIS ID		
Attending MD		
MUSE ID		
HIS ID		
Placed By		
HIS ID		
Extra Data 1		
Extra Data 2		
Extra Data 3		
Extra Data 4		
Order Status		
Placer's Order Number		
Filler's Order Number		
Parent Order Number		
Account Number		
Visit Number		
Visit Status		
Start Date/Time		

NW – New Order – EKG on MUSE Order Information Screen (Test 1) (cont'd.)

MUSE Field	Pass/Fail/NA	Comments
Order Placed Time		
Order Expires Time		
Priority		
Validated By: Name: Role: Date:		

NW – New Order - Signal Averaged

Use the following table template to build and customize your own table to collect test results for messages and event types sent between your HIS and the MUSE system.

NW – New Order – Signal Averaged on MUSE Order Information Screen (Test 2)

MUSE Field	Pass/Fail/NA	Comments
Patient ID		
Last, First Name		
Sex		
Race		
HIS Disposition		
MUSE Location		
Patient Location		
Room		
Bed		
Test Type		
HIS Test Type		
Test Reason		
Comments		
Admitting Diagnosis		
Referring MD		
MUSE ID		
HIS ID		
Ordering MD		
MUSE ID		
HIS ID		

NW – New Order – Signal Averaged on MUSE Order Information Screen (Test 2) (cont'd.)

MUSE Field	Pass/Fail/NA	Comments
Attending MD		
MUSE ID		
HIS ID		
Placed By		
HIS ID		
Extra Data 1		
Extra Data 2		
Extra Data 3		
Extra Data 4		
Order Status		
Placer's Order Number		
Filler's Order Number		
Parent Order Number		
Account Number		
Visit Number		
Visit Status		
Start Date/Time		
Order Placed Time		
Order Expires Time		
Priority		
Validated By:		
Name:		
Role:		
Date:		

NW – New Order - Holter

Use the following table template to build and customize your own table to collect test results for messages and event types sent between your HIS and the MUSE system.

NW – New Order – Holter on MUSE Order Information Screen (Test 3)

MUSE Field	Pass/Fail/NA	Comments
Patient ID		
Last, First Name		
Sex		
Race		

NW – New Order – Holter on MUSE Order Information Screen (Test 3) (cont'd.)

MUSE Field	Pass/Fail/NA	Comments
HIS Disposition		
MUSE Location		
Patient Location		
Room		
Bed		
Test Type		
HIS Test Type		
Test Reason		
Comments		
Admitting Diagnosis		
Referring MD		
MUSE ID		
HIS ID		
Ordering MD		
MUSE ID		
HIS ID		
Attending MD		
MUSE ID		
HIS ID		
Placed By		
HIS ID		
Extra Data 1		
Extra Data 2		
Extra Data 3		
Extra Data 4		
Order Status		
Placer's Order Number		
Filler's Order Number		
Parent Order Number		
Account Number		
Visit Number		
Visit Status		
Start Date/Time		
Order Placed Time		

NW – New Order – Holter on MUSE Order Information Screen (Test 3) (cont'd.)

MUSE Field	Pass/Fail/ NA	Comments
Order Expires Time		
Priority		
Validated By:		
Name:		
Role:		
Date:		

NW – New Order - Stress

Use the following table template to build and customize your own table to collect test results for messages and event types sent between your HIS and the MUSE system.

NW – New Order – Stress on MUSE Order Information Screen (Test 4)

MUSE Field	Pass/Fail/ NA	Comments
Patient ID:		
Last, First Name		
Sex		
Race		
HIS Disposition		
MUSE Location		
Patient Location		
Room		
Bed		
Test Type		
HIS Test Type		
Test Reason		
Comments		
Admitting Diagnosis		
Referring MD		
MUSE ID		
HIS ID		
Ordering MD		
MUSE ID		
HIS ID		
Attending MD		
MUSE ID		

NW – New Order – Stress on MUSE Order Information Screen (Test 4) (cont'd.)

MUSE Field	Pass/Fail/NA	Comments
HIS ID		
Placed By		
HIS ID		
Extra Data 1		
Extra Data 2		
Extra Data 3		
Extra Data 4		
Order Status		
Placer's Order Number		
Filler's Order Number		
Parent Order Number		
Account Number		
Visit Number		
Visit Status		
Start Date/Time		
Order Placed Time		
Order Expires Time		
Priority		
Validated By:		
Name:		
Role:		
Date:		

Change Orders

- "XO – Change Order - EKG" on page 174
- "XO – Change Order - Signal Averaged" on page 175
- "XO – Change Order – Holter" on page 176
- "XO – Change Order – Stress" on page 176

XO – Change Order - EKG

Use the following table template to build and customize your own table to collect test results for messages and event types sent between your HIS and the MUSE system.

XO – Change Order – EKG on MUSE Order Information Screen (Test 5)

MUSE Field	Pass/Fail/NA	Comments
Patient ID		
Last, First Name		
Placer’s Order Number: _____		
OLD Test Reason: _____		
NEW Test Reason: _____		
Validated By: Name: Role: Date:		

XO – Change Order - Signal Averaged

Use the following table template to build and customize your own table to collect test results for messages and event types sent between your HIS and the MUSE system.

XO – Change Order – Signal Averaged on MUSE Order Information Screen (Test 6)

MUSE Field	Pass/Fail/NA	Comments
Patient ID:		
Last, First Name:		
Placer’s Order Number: _____		
OLD Start Date/Time: _____		
NEW Start Date/Time: _____		
Validated By: Name: Role: Date:		

XO – Change Order – Holter

Use the following table template to build and customize your own table to collect test results for messages and event types sent between your HIS and the MUSE system.

XO – Change Order – Holter on MUSE Order Information Screen (Test 7)

MUSE Field	Pass/Fail/NA	Comments
Patient ID:		
Last, First Name:		
Placer's Order Number: _____		
OLD Ordering MD: Name: _____ MUSE ID: _____ HIS ID: _____		
NEW Ordering MD: Name: _____ MUSE ID: _____ HIS ID: _____		
Validated By: Name: Role: Date:		

XO – Change Order – Stress

Use the following table template to build and customize your own table to collect test results for messages and event types sent between your HIS and the MUSE system.

XO – Change Order – Stress on MUSE Order Information Screen (Test 8)

MUSE Field	Pass/Fail/NA	Comments
Patient ID:		
Last, First Name:		
Placer's Order Number: _____		
OLD Comment: _____ _____		

XO – Change Order – Stress on MUSE Order Information Screen (Test 8) (cont'd.)

MUSE Field	Pass/Fail/NA	Comments
NEW Comment: _____ _____		
Validated By: Name: Role: Date:		

Order Priority

To fully test order priority, be certain to enter an order with each of the order priorities available on your HIS (e.g., Routine, STAT, ASAP).

- “NW – Enter Order – EKG STAT Priority” on page 177
- “NW – Enter Order – EKG Routine Priority” on page 178
- “NW – Enter Order – EKG ASAP Priority” on page 178

NW – Enter Order – EKG STAT Priority

Use the following table template to build and customize your own table to collect test results for messages and event types sent between your HIS and the MUSE system.

NW – Enter Order – EKG STAT Priority on MUSE Order Information Screen (Test 9)

MUSE Field	Pass/Fail/NA	Comments
Patient ID:		
Last, First Name:		
Placer’s Order Number: _____		
Priority: STAT		
Validated By: Name: Role: Date:		

NW – Enter Order – EKG Routine Priority

Use the following table template to build and customize your own table to collect test results for messages and event types sent between your HIS and the MUSE system.

NW – Enter Order – EKG Routine Priority on MUSE Order Information Screen (Test 10)

MUSE Field	Pass/Fail/NA	Comments
Patient ID:		
Last, First Name:		
Placer's Order Number: _____		
Priority: Routine		
Validated By: Name: Role: Date:		

NW – Enter Order – EKG ASAP Priority

Use the following table template to build and customize your own table to collect test results for messages and event types sent between your HIS and the MUSE system.

NW – Enter Order – EKG ASAP Priority on MUSE Order Information Screen (Test 11)

MUSE Field	Pass/Fail/NA	Comments
Patient ID:		
Last, First Name:		
Placer's Order Number: _____		
Priority: ASAP		
Validated By: Name: Role: Date:		

New EKG Orders with a Future Date

Use the following table template to build and customize your own table to collect test results for messages and event types sent between your HIS and the MUSE system.

NOTE:

In the following sample, the order is dated 3 days from the current date.

NW – New Order – Future Dated EKG Order on MUSE Order Information (Test 12)

MUSE Field	Pass/Fail/NA	Comments
Patient ID:		
Last, First Name:		
Placer's Order Number:		
Start Date/Time:		
Order Placed Time:		
Order Expires Time:		
Validated By: Name: Role: Date:		

Multiple Occurrence EKG Order

Use the following table template to build and customize your own table to collect test results for messages and event types sent between your HIS and the MUSE system.

NOTE:

In the following sample, the order is scheduled to occur at 0800 for each of the next 3 days.

NW – New Order – Multiple Occurrence EKG Order on MUSE Order Information Screen (Test 13)

MUSE Field	Pass/Fail/NA	Comments
Patient ID:		
Last, First Name:		
First Occurrence Placer's Order Number: _____ Filler's Order Number: _____ Start Date/Time: _____ Order Placed Time: _____		

NW – New Order – Multiple Occurrence EKG Order on MUSE Order Information Screen (Test 13) (cont'd.)

MUSE Field	Pass/Fail/NA	Comments
<p>Second Occurrence</p> <p>Placer's Order Number: _____</p> <p>Filler's Order Number: _____</p> <p>Start Date/Time: _____</p> <p>Order Placed Time: _____</p> <p>Third Occurrence</p> <p>Placer's Order Number: _____</p> <p>Filler's Order Number: _____</p> <p>Start Date/Time: _____</p> <p>Order Placed Time: _____</p>		
<p>Validated By:</p> <p>Name:</p> <p>Role:</p> <p>Date:</p>		

Cancel EKG Order

Use the following table template to build and customize your own table to collect test results for messages and event types sent between your HIS and the MUSE system.

CA – Cancel Order – EKG on MUSE Order Information Screen (Test 14)

MUSE Field	Pass/Fail/NA	Comments
Patient ID:		
Last, First Name:		
Placer's Order Number:		
<p>OLD Order Status: _____</p> <p>NEW Order Status: _____</p>		
<p>Validated By:</p> <p>Name:</p> <p>Role:</p> <p>Date:</p>		

Discontinue EKG Order

Use the following table template to build and customize your own table to collect test results for messages and event types sent between your HIS and the MUSE system.

OD – Discontinue – EKG on MUSE Order Information Screen (Test 15)

MUSE Field	Pass/Fail/NA	Comments
Patient ID:		
Last, First Name:		
Placer's Order Number:		
OLD Order Status: _____ NEW Order Status: _____		
Validated By: Name: Role: Date:		



Results Test Plan Templates

Introduction

The information in this test plan template is designed to be a guide or starting point for you to use as you develop the test plans for your hospital. You need to review and revise the testing information presented here to meet your hospital's workflow and data exchange requirements.

The test templates in this section are divided into two sets: one for hospitals only using the ADT interface and one for those hospitals using the ADT and Orders interfaces. Each set contains templates for the following result statuses: preliminary results, demographic complete results, final results, and corrected results. Each result status has templates for the following test types: EKG, HiRes, Holter, and Stress.

The following links are for test templates to be used only with the ADT interface.

- ["MUSE Preliminary Results on ADT Interface Only" on page 184](#)
- ["MUSE Demographic Complete Results on ADT Interface Only" on page 191](#)
- ["MUSE Final Results on ADT Interface Only" on page 198](#)
- ["MUSE Corrected Results on ADT Interface Only" on page 204](#)

The following sections are for test templates to be used with the ADT and Orders interfaces.

- ["MUSE Preliminary Results on ADT and Orders Interface" on page 212](#)
- ["MUSE Demographic Complete Results on ADT and Orders Interface" on page 220](#)
- ["MUSE Final Results on ADT and Orders Interface" on page 228](#)
- ["MUSE Corrected Results on ADT and Orders Interfaces" on page 236](#)

If you choose to use the test plan templates in this document, first read [Chapter 9 "HL7 Interface Testing" on page 91](#). The document contains valuable information to consider when developing and customizing your test plans. It also contains instructions on how to validate the data fields that are sent from your hospital

information system (HIS) to the MUSE system. Keep the document handy as you will want to refer to it during testing.

NOTE:

To ensure the test mirrors production as closely as possible, it is strongly suggested that your hospital's registration staff perform the registration functions on your HIS for testing. Likewise, clinical or clerical staff that routinely enters orders for the tests supported on the MUSE system should perform the order functions on your HIS for testing. For testing purposes, confirm that all fields that are to be sent to the MUSE system are populated (such as, phone number, order comments, referring physician etc.).

When validating results sent from the MUSE system to your HIS, be sure to have clinicians (nurses, physicians, etc.), who will be viewing the results in production, validate that the result posted to the EMR contains the data from the result report on the MUSE system that they are expecting to view.

When validating billing sent from the MUSE system to your HIS, have the staff from your hospital and technical billing areas validate that the charges post are as expected and contain all data required to create an invoice.

The following table contains the information that you will be capturing for each test:

Type of Information to Record	Description
Pass/Fail/NA	Record one of the following valid values for the test: <ul style="list-style-type: none"> • PASS Indicates that the data field on the MUSE system contains the expected value. • FAIL Indicates that the data field on the MUSE system does not contain the expected value. The field could also be empty. • NA Indicates that a value for this data field was not or will not be sent from your HIS system.
Comments	Record any comments about the test results. Especially, capture any comments that can help clarify if a test did not pass.
Validated by	Record the name and role of the person who is validating that each data field is populated during the test. Also, record the date the validation was completed. For example, Molly Brown, HL7 Engineer, 15 December 2015.

MUSE Preliminary Results on ADT Interface Only

Preliminary Results for EKG

Use the following table template to build and customize your own table to collect test results for messages and event types from your HIS/EMS to the MUSE system.

Preliminary Result – EKG on ADT Interface Only (Test 1)

HIS/EMR View/Print	PASS/FAIL/ NA	Comments
Patient ID: Last, First Name: Study Date: Test Instruction: <ol style="list-style-type: none"> On the MUSE system, attach Visit to Study. Save Update. Print result to HL7 device. 		
System: <i>(Enter name of HIS/EMR system where Result is expected to post. If Result message is to post to multiple systems, create a form for each system.)</i>		
Format: <i>(Enter type of Result information sent to the MUSE system, for example, Discrete Test Data, Test Summary, URL link to MUSE Web, Embedded waveform.)</i>		
Hospital Requirements for Text Results <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Exam Date/Time valued at beginning of Text Summary		
Hospital Requirements for URL <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
User is not prompted to enter Login or Password to view URL.		
Hospital Requirements for Embedded Waveform <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		

Preliminary Result – EKG on ADT Interface Only (Test 1) (cont'd.)

HIS/EMR View/Print	PASS/FAIL/NA	Comments
If result report contains multiple pages, each page is displayed.		
Hospital Requirements for Other <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Report Status is Preliminary.		
Validated By: Name: Role: Date:		

Preliminary Results for HiRes

Use the following table template to build and customize your own table to collect test results for messages and event types from your HIS/EMS to the MUSE system.

Preliminary Result – HiRes on ADT Interface Only (Test 2)

HIS/EMR View/Print	PASS/FAIL/NA	Comments
Patient ID: Last, First Name: Study Date: Test Instruction: 1. On the MUSE system, attach Visit to Study. 2. Save Update. 3. Print result to HL7 device.		
System: <i>(Enter name of HIS/EMR system where Result is expected to post. If Result message is to post to multiple systems, create a form for each system.)</i>		
Format: <i>(Enter type of Result information sent to the MUSE system, for example, Discrete Test Data, Test Summary, URL link to MUSE Web, Embedded waveform.)</i>		

Preliminary Result – HiRes on ADT Interface Only (Test 2) (cont'd.)

HIS/EMR View/Print	PASS/FAIL/ NA	Comments
Hospital Requirements for Text Results <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Exam Date/Time valued at beginning of Text Summary		
Hospital Requirements for URL <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
User is not prompted to enter Login or Password to view URL.		
Hospital Requirements for Embedded Waveform <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
If result report contains multiple pages, each page is displayed.		
Hospital Requirements for Other <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Report Status is Preliminary.		

Preliminary Result – HiRes on ADT Interface Only (Test 2) (cont'd.)

HIS/EMR View/Print	PASS/FAIL/NA	Comments
Validated By: Name: Role: Date:		

Preliminary Results for Holter

Use the following table template to build and customize your own table to collect test results for messages and event types from your HIS/EMS to the MUSE system.

Preliminary Result – Holter on ADT Interface Only (Test 3)

HIS/EMR View/Print	PASS/FAIL/NA	Comments
Patient ID: Last, First Name: Study Date: Test Instruction: 1. On the MUSE system, attach Visit to Study. 2. Save Update. 3. Print result to HL7 device.		
System: <i>(Enter name of HIS/EMR system where Result is expected to post. If Result message is to post to multiple systems, create a form for each system.)</i>		
Format: <i>(Enter type of Result information sent to the MUSE system, for example, Discrete Test Data, Test Summary, URL link to MUSE Web, Embedded waveform.)</i>		
Hospital Requirements for Text Results <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Exam Date/Time valued at beginning of Text Summary		

Preliminary Result – Holter on ADT Interface Only (Test 3) (cont'd.)

HIS/EMR View/Print	PASS/FAIL/ NA	Comments
Hospital Requirements for URL <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
User is not prompted to enter Login or Password to view URL.		
Hospital Requirements for Embedded Waveform <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
If result report contains multiple pages, each page is displayed.		
Hospital Requirements for Other <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Report Status is Preliminary.		
Validated By: Name: Role: Date:		

MUSE Preliminary Results for Stress

Use the following table template to build and customize your own table to collect test results for messages and event types from your HIS/EMS to the MUSE system.

Preliminary Result – Stress on ADT Interface Only (Test 4)

HIS/EMR View/Print	PASS/FAIL/ NA	Comments
Patient ID: Last, First Name: Study Date: Test Instruction: <ol style="list-style-type: none"> 1. On the MUSE system, attach Visit to Study. 2. Save Update. 3. Print result to HL7 device. 		
System: <i>(Enter name of HIS/EMR system where Result is expected to post. If Result message is to post to multiple systems, create a form for each system.)</i>		
Format: <i>(Enter type of Result information sent to the MUSE system, for example, Discrete Test Data, Test Summary, URL link to MUSE Web, Embedded waveform.)</i>		
Hospital Requirements for Text Results <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Exam Date/Time valued at beginning of Text Summary		
Hospital Requirements for URL <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
User is not prompted to enter Login or Password to view URL.		
Hospital Requirements for Embedded Waveform <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		

Preliminary Result – Stress on ADT Interface Only (Test 4) (cont'd.)

HIS/EMR View/Print	PASS/FAIL/NA	Comments
If result report contains multiple pages, each page is displayed.		
Hospital Requirements for Other <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Report Status is Preliminary.		
Validated By:		
Name:		
Role:		
Date:		

MUSE Demographic Complete Results on ADT Interface Only

Demographic Complete Results for EKG

Use the following table template to build and customize your own table to collect test results for messages and event types from your HIS/EMS to the MUSE system.

Demographic Complete Result – EKG on ADT Interface Only (Test 5)

HIS/EMR View/Print	PASS/FAIL/NA	Comments
Patient ID: Last, First Name: Study Date: Test Instruction: <ol style="list-style-type: none"> On the MUSE system, attach Visit to Study. Save as Demographic Complete. 		
System: <i>(Enter name of HIS/EMR system where Result is expected to post. If Result message is to post to multiple systems, create a form for each system.)</i>		

Demographic Complete Result – EKG on ADT Interface Only (Test 5) (cont'd.)

HIS/EMR View/Print	PASS/FAIL/ NA	Comments
Format: (Enter type of Result information sent to the MUSE system, for example, Discrete Test Data, Test Summary, URL link to MUSE Web, Embedded waveform.)		
Hospital Requirements for Text Results (Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)		
Exam Date/Time valued at beginning of Text Summary		
Hospital Requirements for URL (Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)		
When Image icon is selected, the PDF report for the patient is displayed.		
User is not prompted to enter Login or Password to view URL.		
Hospital Requirements for Embedded Waveform (Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)		
When Image icon is selected, the PDF report for the patient is displayed.		
If result report contains multiple pages, each page is displayed.		
Hospital Requirements for Other (Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)		
Report Status is Preliminary.		

Demographic Complete Result – EKG on ADT Interface Only (Test 5) (cont'd.)

HIS/EMR View/Print	PASS/FAIL/ NA	Comments
Validated By: Name: Role: Date:		

MUSE Demographic Complete Results for HiRes

Use the following table template to build and customize your own table to collect test results for messages and event types from your HIS/EMS to the MUSE system.

Demographic Complete Result – HiRes on ADT Interface Only (Test 6)

HIS/EMR View/Print	PASS/FAIL/ NA	Comments
Patient ID: Last, First Name: Study Date: Test Instruction: 1. On the MUSE system, attach Visit to Study. 2. Save as Demographic Complete.		
System: <i>(Enter name of HIS/EMR system where Result is expected to post. If Result message is to post to multiple systems, create a form for each system.)</i>		
Format: <i>(Enter type of Result information sent to the MUSE system, for example, Discrete Test Data, Test Summary, URL link to MUSE Web, Embedded waveform.)</i>		
Hospital Requirements for Text Results <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Exam Date/Time valued at beginning of Text Summary		
Hospital Requirements for URL <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		

Demographic Complete Result – HiRes on ADT Interface Only (Test 6) (cont'd.)

HIS/EMR View/Print	PASS/FAIL/NA	Comments
When Image icon is selected, the PDF report for the patient is displayed.		
User is not prompted to enter Login or Password to view URL.		
Hospital Requirements for Embedded Waveform		
<i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
If result report contains multiple pages, each page is displayed.		
Hospital Requirements for Other		
<i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Report Status is Preliminary.		
Validated By: Name: Role: Date:		

Demographic Complete Results for Holter

Use the following table template to build and customize your own table to collect test results for messages and event types from your HIS/EMS to the MUSE system.

Demographic Complete Result – Holter on ADT Interface Only (Test 7)

HIS/EMR View/Print	PASS/FAIL/NA	Comments
Patient ID: Last, First Name: Study Date: Test Instruction: 1. On the MUSE system, attach Visit to Study. 2. Save as Demographic Complete.		
System: <i>(Enter name of HIS/EMR system where Result is expected to post. If Result message is to post to multiple systems, create a form for each system.)</i>		
Format: <i>(Enter type of Result information sent to the MUSE system, for example, Discrete Test Data, Test Summary, URL link to MUSE Web, Embedded waveform.)</i>		
Hospital Requirements for Text Results <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Exam Date/Time valued at beginning of Text Summary		
Hospital Requirements for URL <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
User is not prompted to enter Login or Password to view URL.		
Hospital Requirements for Embedded Waveform <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		

Demographic Complete Result – Holter on ADT Interface Only (Test 7) (cont'd.)

HIS/EMR View/Print	PASS/FAIL/NA	Comments
If result report contains multiple pages, each page is displayed.		
Hospital Requirements for Other <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Report Status is Preliminary.		
Validated By: Name: Role: Date:		

Demographic Complete Results for Stress

Use the following table template to build and customize your own table to collect test results for messages and event types from your HIS/EMS to the MUSE system.

Demographic Complete Result – Stress on ADT Interface Only (Test)

HIS/EMR View/Print	PASS/FAIL/NA	Comments
Patient ID: Last, First Name: Study Date: Test Instruction: 1. On the MUSE system, attach Visit to Study. 2. Save as Demographic Complete.		
System: <i>(Enter name of HIS/EMR system where Result is expected to post. If Result message is to post to multiple systems, create a form for each system.)</i>		
Format: <i>(Enter type of Result information sent to the MUSE system, for example, Discrete Test Data, Test Summary, URL link to MUSE Web, Embedded waveform.)</i>		

Demographic Complete Result – Stress on ADT Interface Only (Test) (cont'd.)

HIS/EMR View/Print	PASS/FAIL/ NA	Comments
Hospital Requirements for Text Results <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Exam Date/Time valued at beginning of Text Summary		
Hospital Requirements for URL <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
User is not prompted to enter Login or Password to view URL.		
Hospital Requirements for Embedded Waveform <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
If result report contains multiple pages, each page is displayed.		
Hospital Requirements for Other <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Report Status is Preliminary.		

Demographic Complete Result – Stress on ADT Interface Only (Test) (cont'd.)

HIS/EMR View/Print	PASS/FAIL/NA	Comments
Validated By: Name: Role: Date:		

MUSE Final Results on ADT Interface Only

Final Result for EKG

Use the following table template to build and customize your own table to collect test results for messages and event types from your HIS/EMS to the MUSE system.

Final Result – EKG on ADT Interface Only (Test 9)

HIS/EMR View/Print	PASS/FAIL/NA	Comments
Patient ID: Last, First Name: Study Date: Test Instruction: 1. On the MUSE system, attach Visit to Study. 2. Save as Update. 3. Confirm and route to HL7 device.		
System: <i>(Enter name of HIS/EMR system where Result is expected to post. If Result message is to post to multiple systems, create a form for each system.)</i>		
Format: <i>(Enter type of Result information sent to the MUSE system, for example, Discrete Test Data, Test Summary, URL link to MUSE Web, Embedded waveform.)</i>		
Hospital Requirements for Text Results <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Exam Date/Time valued at beginning of Text Summary		
Confirmed by Date/Time valued		

Final Result – EKG on ADT Interface Only (Test 9) (cont'd.)

HIS/EMR View/Print	PASS/FAIL/NA	Comments
Hospital Requirements for URL <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
User is not prompted to enter Login or Password to view URL.		
Hospital Requirements for Embedded Waveform <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
If result report contains multiple pages, each page is displayed.		
Hospital Requirements for Other <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Report Status is Preliminary.		
Validated By: Name: Role: Date:		

Final Result for HiRes

Use the following table template to build and customize your own table to collect test results for messages and event types from your HIS/EMS to the MUSE system.

Final Result – HiRes on ADT Interface Only (Test 10)

HIS/EMR View/Print	PASS/FAIL/ NA	Comments
Patient ID: Last, First Name: Study Date: Test Instruction: 1. On the MUSE system, attach Visit to Study. 2. Save as Update. 3. Confirm and route to HL7 device.		
System: <i>(Enter name of HIS/EMR system where Result is expected to post. If Result message is to post to multiple systems, create a form for each system.)</i>		
Format: <i>(Enter type of Result information sent to the MUSE system, for example, Discrete Test Data, Test Summary, URL link to MUSE Web, Embedded waveform.)</i>		
Hospital Requirements for Text Results <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Exam Date/Time valued at beginning of Text Summary		
Confirmed by Date/Time valued		
Hospital Requirements for URL <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
User is not prompted to enter Login or Password to view URL.		
Hospital Requirements for Embedded Waveform <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		

Final Result – HiRes on ADT Interface Only (Test 10) (cont'd.)

HIS/EMR View/Print	PASS/FAIL/NA	Comments
If result report contains multiple pages, each page is displayed.		
Hospital Requirements for Other <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Report Status is Preliminary.		
Validated By:		
Name:		
Role:		
Date:		

Final Result for Holter

Use the following table template to build and customize your own table to collect test results for messages and event types from your HIS/EMS to the MUSE system.

Final Result – Holter on ADT Interface Only (Test 11)

HIS/EMR View/Print	PASS/FAIL/NA	Comments
Patient ID: Last, First Name: Study Date: Test Instruction: <ol style="list-style-type: none"> On the MUSE system, attach Visit to Study. Save as Update. Confirm and route to HL7 device. 		
System: <i>(Enter name of HIS/EMR system where Result is expected to post. If Result message is to post to multiple systems, create a form for each system.)</i>		
Format: <i>(Enter type of Result information sent to the MUSE system, for example, Discrete Test Data, Test Summary, URL link to MUSE Web, Embedded waveform.)</i>		

Final Result – Holter on ADT Interface Only (Test 11) (cont'd.)

HIS/EMR View/Print	PASS/FAIL/ NA	Comments
Hospital Requirements for Text Results <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Exam Date/Time valued at beginning of Text Summary		
Confirmed by Date/Time valued		
Hospital Requirements for URL <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
User is not prompted to enter Login or Password to view URL.		
Hospital Requirements for Embedded Waveform <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
If result report contains multiple pages, each page is displayed.		
Hospital Requirements for Other <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Report Status is Preliminary.		

Final Result – Holter on ADT Interface Only (Test 11) (cont'd.)

HIS/EMR View/Print	PASS/FAIL/NA	Comments
Validated By: Name: Role: Date:		

Final Result for Stress

Use the following table template to build and customize your own table to collect test results for messages and event types from your HIS/EMS to the MUSE system.

Final Result – Stress on ADT Interface Only (Test 12)

HIS/EMR View/Print	PASS/FAIL/NA	Comments
Patient ID: Last, First Name: Study Date: Test Instruction: <ol style="list-style-type: none"> On the MUSE system, attach Visit to Study. Save as Update. Confirm and route to HL7 device. 		
System: <i>(Enter name of HIS/EMR system where Result is expected to post. If Result message is to post to multiple systems, create a form for each system.)</i>		
Format: <i>(Enter type of Result information sent to the MUSE system, for example, Discrete Test Data, Test Summary, URL link to MUSE Web, Embedded waveform.)</i>		
Hospital Requirements for Text Results <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Exam Date/Time valued at beginning of Text Summary		
Confirmed by Date/Time valued		

Final Result – Stress on ADT Interface Only (Test 12) (cont'd.)

HIS/EMR View/Print	PASS/FAIL/NA	Comments
Hospital Requirements for URL <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
User is not prompted to enter Login or Password to view URL.		
Hospital Requirements for Embedded Waveform <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
If result report contains multiple pages, each page is displayed.		
Hospital Requirements for Other <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Report Status is Preliminary.		
Validated By: Name: Role: Date:		

MUSE Corrected Results on ADT Interface Only

Corrected Result for EKG

Use the following table template to build and customize your own table to collect test results for messages and event types from your HIS/EMS to the MUSE system.

Corrected Result – EKG on ADT Interface Only (Test 13)

HIS/EMR View/Print	PASS/FAIL/NA	Comments
Patient ID: Last, First Name: Study Date: Test Instruction: <ol style="list-style-type: none"> 1. On the MUSE system, open the confirmed study. 2. Add free text to the interpretation section. 3. Confirm and route to HL7 device. 		
System: <i>(Enter name of HIS/EMR system where Result is expected to post. If Result message is to post to multiple systems, create a form for each system.)</i>		
Format: <i>(Enter type of Result information sent to the MUSE system, for example, Discrete Test Data, Test Summary, URL link to MUSE Web, Embedded waveform.)</i>		
Hospital Requirements for Text Results <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Exam Date/Time valued at beginning of Text Summary		
Confirmed by Date/Time valued or Reconfirmed by Date/Time valued		
Text entered for correction valued		
Hospital Requirements for URL <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
User is not prompted to enter Login or Password to view URL.		

Corrected Result – EKG on ADT Interface Only (Test 13) (cont'd.)

HIS/EMR View/Print	PASS/FAIL/ NA	Comments
Hospital Requirements for Embedded Waveform <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
If result report contains multiple pages, each page is displayed.		
Hospital Requirements for Other <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Report Status is Preliminary.		
Validated By: Name: Role: Date:		

Corrected Result for HiRes

Use the following table template to build and customize your own table to collect test results for messages and event types from your HIS/EMS to the MUSE system.

Corrected Result – HiRes on ADT Interface Only (Test 14)

HIS/EMR View/Print	PASS/FAIL/NA	Comments
Patient ID: Last, First Name: Study Date: Test Instruction: <ol style="list-style-type: none"> On the MUSE system, open the confirmed study. Add free text to the interpretation section. Confirm and route to HL7 device. 		
System: <i>(Enter name of HIS/EMR system where Result is expected to post. If Result message is to post to multiple systems, create a form for each system.)</i>		
Format: <i>(Enter type of Result information sent to the MUSE system, for example, Discrete Test Data, Test Summary, URL link to MUSE Web, Embedded waveform.)</i>		
Hospital Requirements for Text Results <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Exam Date/Time valued at beginning of Text Summary		
Confirmed by Date/Time valued or Reconfirmed by Date/Time valued		
Text entered for correction valued		
Hospital Requirements for URL <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
User is not prompted to enter Login or Password to view URL.		

Corrected Result – HiRes on ADT Interface Only (Test 14) (cont'd.)

HIS/EMR View/Print	PASS/FAIL/ NA	Comments
Hospital Requirements for Embedded Waveform <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
If result report contains multiple pages, each page is displayed.		
Hospital Requirements for Other <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Report Status is Preliminary.		
Validated By: Name: Role: Date:		

Corrected Result for Holter

Use the following table template to build and customize your own table to collect test results for messages and event types from your HIS/EMS to the MUSE system.

Corrected Result – Holter on ADT Interface Only (Test 15)

HIS/EMR View/Print	PASS/FAIL/NA	Comments
Patient ID: Last, First Name: Study Date: Test Instruction: <ol style="list-style-type: none"> On the MUSE system, open the confirmed study. Add free text to the interpretation section. Confirm and route to HL7 device. 		
System: <i>(Enter name of HIS/EMR system where Result is expected to post. If Result message is to post to multiple systems, create a form for each system.)</i>		
Format: <i>(Enter type of Result information sent to the MUSE system, for example, Discrete Test Data, Test Summary, URL link to MUSE Web, Embedded waveform.)</i>		
Hospital Requirements for Text Results <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Exam Date/Time valued at beginning of Text Summary		
Confirmed by Date/Time valued or Reconfirmed by Date/Time valued		
Text entered for correction valued		
Hospital Requirements for URL <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
User is not prompted to enter Login or Password to view URL.		

Corrected Result – Holter on ADT Interface Only (Test 15) (cont'd.)

HIS/EMR View/Print	PASS/FAIL/ NA	Comments
Hospital Requirements for Embedded Waveform <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
If result report contains multiple pages, each page is displayed.		
Hospital Requirements for Other <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Report Status is Preliminary.		
Validated By: Name: Role: Date:		

Corrected Result for Stress

Use the following table template to build and customize your own table to collect test results for messages and event types from your HIS/EMS to the MUSE system.

Corrected Result – Stress on ADT Interface Only (Test 16)

HIS/EMR View/Print	PASS/FAIL/NA	Comments
Patient ID: Last, First Name: Study Date: Test Instruction: <ol style="list-style-type: none"> On the MUSE system, open the confirmed study. Add free text to the interpretation section. Confirm and route to HL7 device. 		
System: <i>(Enter name of HIS/EMR system where Result is expected to post. If Result message is to post to multiple systems, create a form for each system.)</i>		
Format: <i>(Enter type of Result information sent to the MUSE system, for example, Discrete Test Data, Test Summary, URL link to MUSE Web, Embedded waveform.)</i>		
Hospital Requirements for Text Results <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Exam Date/Time valued at beginning of Text Summary		
Confirmed by Date/Time valued or Reconfirmed by Date/Time valued		
Text entered for correction valued		
Hospital Requirements for URL <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
User is not prompted to enter Login or Password to view URL.		

Corrected Result – Stress on ADT Interface Only (Test 16) (cont'd.)

HIS/EMR View/Print	PASS/FAIL/ NA	Comments
Hospital Requirements for Embedded Waveform <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
If result report contains multiple pages, each page is displayed.		
Hospital Requirements for Other <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Report Status is Preliminary.		
Validated By: Name: Role: Date:		

MUSE Preliminary Results on ADT and Orders Interface

Preliminary Results for EKG

Use the following table template to build and customize your own table to collect test results for messages and event types from your HIS/EMS to the MUSE system.

Preliminary Result – EKG on ADT Interface and Orders Interface (Test 1)

HIS/EMR View/Print	PASS/FAIL/NA	Comments
Patient ID: Last, First Name: Study Date: Test Instruction: <ol style="list-style-type: none"> 1. On the MUSE system, attach order to study. 2. Save Update. 3. Print result to HL7 device. 		
System: <i>(Enter name of HIS/EMR system where Result is expected to post. If Result message is to post to multiple systems, create a form for each system.)</i>		
Format: <i>(Enter type of Result information sent to the MUSE system, for example, Discrete Test Data, Test Summary, URL link to MUSE Web, Embedded waveform.)</i>		
Hospital Requirements for Text Results <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Exam Date/Time valued at beginning of Text Summary		
Hospital Requirements for URL <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
User is not prompted to enter Login or Password to view URL.		

Preliminary Result – EKG on ADT Interface and Orders Interface (Test 1) (cont'd.)

HIS/EMR View/Print	PASS/FAIL/NA	Comments
Hospital Requirements for Embedded Waveform <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
If result report contains multiple pages, each page is displayed.		
Hospital Requirements for Other <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Report Status is Preliminary.		
Order Status is updated. NOTE: The MUSE v9.x system does not transmit Order Status Update transactions, but many customers use the ORU (result) message to create update message to their Order System.		
Validated By:		
Name:		
Role:		
Date:		

Preliminary Results for HiRes

Use the following table template to build and customize your own table to collect test results for messages and event types from your HIS/EMS to the MUSE system.

Preliminary Result – HiRes on ADT Interface and Orders Interface (Test 2)

HIS/EMR View/Print	PASS/FAIL/NA	Comments
Patient ID: Last, First Name: Study Date: Test Instruction: <ol style="list-style-type: none"> 1. On the MUSE system, attach order to study. 2. Save Update. 3. Print result to HL7 device. 		
System: <i>(Enter name of HIS/EMR system where Result is expected to post. If Result message is to post to multiple systems, create a form for each system.)</i>		
Format: <i>(Enter type of Result information sent to the MUSE system, for example, Discrete Test Data, Test Summary, URL link to MUSE Web, Embedded waveform.)</i>		
Hospital Requirements for Text Results <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Exam Date/Time valued at beginning of Text Summary		
Hospital Requirements for URL <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
User is not prompted to enter Login or Password to view URL.		

Preliminary Result – HiRes on ADT Interface and Orders Interface (Test 2) (cont'd.)

HIS/EMR View/Print	PASS/FAIL/ NA	Comments
Hospital Requirements for Embedded Waveform <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
If result report contains multiple pages, each page is displayed.		
Hospital Requirements for Other <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Report Status is Preliminary.		
Order Status is updated. NOTE: The MUSE v9.x system does not transmit Order Status Update transactions, but many customers use the ORU (result) message to create update message to their Order System.		
Validated By: Name: Role: Date:		

Preliminary Results for Holter

Use the following table template to build and customize your own table to collect test results for messages and event types from your HIS/EMS to the MUSE system.

Preliminary Result – Holter on ADT Interface and Orders Interface (Test 3)

HIS/EMR View/Print	PASS/FAIL/NA	Comments
Patient ID: Last, First Name: Study Date: Test Instruction: <ol style="list-style-type: none"> 1. On the MUSE system, attach order to study. 2. Save Update. 3. Print result to HL7 device. 		
System: <i>(Enter name of HIS/EMR system where Result is expected to post. If Result message is to post to multiple systems, create a form for each system.)</i>		
Format: <i>(Enter type of Result information sent to the MUSE system, for example, Discrete Test Data, Test Summary, URL link to MUSE Web, Embedded waveform.)</i>		
Hospital Requirements for Text Results <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Exam Date/Time valued at beginning of Text Summary		
Hospital Requirements for URL <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
User is not prompted to enter Login or Password to view URL.		

Preliminary Result – Holter on ADT Interface and Orders Interface (Test 3) (cont'd.)

HIS/EMR View/Print	PASS/FAIL/NA	Comments
Hospital Requirements for Embedded Waveform <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
If result report contains multiple pages, each page is displayed.		
Hospital Requirements for Other <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Report Status is Preliminary.		
Order Status is updated. NOTE: The MUSE v9.x system does not transmit Order Status Update transactions, but many customers use the ORU (result) message to create update message to their Order System.		
Validated By: Name: Role: Date:		

Preliminary Results for Stress

Use the following table template to build and customize your own table to collect test results for messages and event types from your HIS/EMS to the MUSE system.

Preliminary Result – Stress on ADT Interface and Orders Interface (Test 4)

HIS/EMR View/Print	PASS/FAIL/NA	Comments
Patient ID: Last, First Name: Study Date: Test Instruction: <ol style="list-style-type: none"> 1. On the MUSE system, attach order to study. 2. Save Update. 3. Print result to HL7 device. 		
System: <i>(Enter name of HIS/EMR system where Result is expected to post. If Result message is to post to multiple systems, create a form for each system.)</i>		
Format: <i>(Enter type of Result information sent to the MUSE system, for example, Discrete Test Data, Test Summary, URL link to MUSE Web, Embedded waveform.)</i>		
Hospital Requirements for Text Results <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Exam Date/Time valued at beginning of Text Summary		
Hospital Requirements for URL <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
User is not prompted to enter Login or Password to view URL.		

Preliminary Result – Stress on ADT Interface and Orders Interface (Test 4) (cont'd.)

HIS/EMR View/Print	PASS/FAIL/NA	Comments
Hospital Requirements for Embedded Waveform <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
If result report contains multiple pages, each page is displayed.		
Hospital Requirements for Other <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Report Status is Preliminary.		
Order Status is updated. NOTE: The MUSE v9.x system does not transmit Order Status Update transactions, but many customers use the ORU (result) message to create update message to their Order System.		
Validated By: Name: Role: Date:		

MUSE Demographic Complete Results on ADT and Orders Interface

Demographic Complete Results for EKG

Use the following table template to build and customize your own table to collect test results for messages and event types from your HIS/EMS to the MUSE system.

Demographic Complete Result – EKG on ADT Interface and Orders Interface (Test 5)

HIS/EMR View/Print	PASS/FAIL/NA	Comments
Patient ID: Last, First Name: Study Date: Test Instruction: <ol style="list-style-type: none"> On the MUSE system, attach order to study. Save as Demographics Complete. 		
System: <i>(Enter name of HIS/EMR system where Result is expected to post. If Result message is to post to multiple systems, create a form for each system.)</i>		
Format: <i>(Enter type of Result information sent to the MUSE system, for example, Discrete Test Data, Test Summary, URL link to MUSE Web, Embedded waveform.)</i>		
Hospital Requirements for Text Results <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Exam Date/Time valued at beginning of Text Summary		
Hospital Requirements for URL <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
User is not prompted to enter Login or Password to view URL.		
Hospital Requirements for Embedded Waveform <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		

Demographic Complete Result – EKG on ADT Interface and Orders Interface (Test 5) (cont'd.)

HIS/EMR View/Print	PASS/FAIL/NA	Comments
When Image icon is selected, the PDF report for the patient is displayed.		
If result report contains multiple pages, each page is displayed.		
Hospital Requirements for Other		
<i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Report Status is Preliminary.		
Order Status is updated. NOTE: The MUSE v9.x system does not transmit Order Status Update transactions, but many customers use the ORU (result) message to create update message to their Order System.		
Validated By:		
Name:		
Role:		
Date:		

Demographic Complete Results for HiRes

Use the following table template to build and customize your own table to collect test results for messages and event types from your HIS/EMS to the MUSE system.

Demographic Complete Result – HiRes on ADT Interface and Orders Interface (Test 6)

HIS/EMR View/Print	PASS/FAIL/ NA	Comments
Patient ID: Last, First Name: Study Date: Test Instruction: 1. On the MUSE system, attach order to study. 2. Save as Demographics Complete.		
System: (Enter name of HIS/EMR system where Result is expected to post. If Result message is to post to multiple systems, create a form for each system.)		
Format: (Enter type of Result information sent to the MUSE system, for example, Discrete Test Data, Test Summary, URL link to MUSE Web, Embedded waveform.)		
Hospital Requirements for Text Results (Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)		
Exam Date/Time valued at beginning of Text Summary		
Hospital Requirements for URL (Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)		
When Image icon is selected, the PDF report for the patient is displayed.		
User is not prompted to enter Login or Password to view URL.		
Hospital Requirements for Embedded Waveform (Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)		

Demographic Complete Result – HiRes on ADT Interface and Orders Interface (Test 6) (cont'd.)

HIS/EMR View/Print	PASS/FAIL/NA	Comments
When Image icon is selected, the PDF report for the patient is displayed.		
If result report contains multiple pages, each page is displayed.		
Hospital Requirements for Other <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Report Status is Preliminary.		
Order Status is updated. NOTE: The MUSE v9.x system does not transmit Order Status Update transactions, but many customers use the ORU (result) message to create update message to their Order System.		
Validated By: Name: Role: Date:		

Demographic Complete Results for Holter

Use the following table template to build and customize your own table to collect test results for messages and event types from your HIS/EMS to the MUSE system.

Demographic Complete Result – Holter on ADT Interface and Orders Interface (Test 7)

HIS/EMR View/Print	PASS/FAIL/ NA	Comments
Patient ID: Last, First Name: Study Date: Test Instruction: 1. On the MUSE system, attach order to study. 2. Save as Demographics Complete.		
System: <i>(Enter name of HIS/EMR system where Result is expected to post. If Result message is to post to multiple systems, create a form for each system.)</i>		
Format: <i>(Enter type of Result information sent to the MUSE system, for example, Discrete Test Data, Test Summary, URL link to MUSE Web, Embedded waveform.)</i>		
Hospital Requirements for Text Results <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Exam Date/Time valued at beginning of Text Summary		
Hospital Requirements for URL <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
User is not prompted to enter Login or Password to view URL.		
Hospital Requirements for Embedded Waveform <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		

Demographic Complete Result – Holter on ADT Interface and Orders Interface (Test 7) (cont'd.)

HIS/EMR View/Print	PASS/FAIL/NA	Comments
When Image icon is selected, the PDF report for the patient is displayed.		
If result report contains multiple pages, each page is displayed.		
Hospital Requirements for Other		
<i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Report Status is Preliminary.		
Order Status is updated. NOTE: The MUSE v9.x system does not transmit Order Status Update transactions, but many customers use the ORU (result) message to create update message to their Order System.		
Validated By: Name: Role: Date:		

Demographic Complete Results for Stress

Use the following table template to build and customize your own table to collect test results for messages and event types from your HIS/EMS to the MUSE system.

Demographic Complete Result – Stress on ADT Interface and Orders Interface (Test 8)

HIS/EMR View/Print	PASS/FAIL/ NA	Comments
Patient ID: Last, First Name: Study Date: Test Instruction: 1. On the MUSE system, attach order to study. 2. Save as Demographics Complete.		
System: <i>(Enter name of HIS/EMR system where Result is expected to post. If Result message is to post to multiple systems, create a form for each system.)</i>		
Format: <i>(Enter type of Result information sent to the MUSE system, for example, Discrete Test Data, Test Summary, URL link to MUSE Web, Embedded waveform.)</i>		
<p align="center">Hospital Requirements for Text Results</p> <p align="center"><i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i></p>		
Exam Date/Time valued at beginning of Text Summary		
<p align="center">Hospital Requirements for URL</p> <p align="center"><i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i></p>		
When Image icon is selected, the PDF report for the patient is displayed.		
User is not prompted to enter Login or Password to view URL.		
<p align="center">Hospital Requirements for Embedded Waveform</p> <p align="center"><i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i></p>		

Demographic Complete Result – Stress on ADT Interface and Orders Interface (Test 8) (cont'd.)

HIS/EMR View/Print	PASS/FAIL/NA	Comments
When Image icon is selected, the PDF report for the patient is displayed.		
If result report contains multiple pages, each page is displayed.		
Hospital Requirements for Other <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Report Status is Preliminary.		
Order Status is updated. NOTE: The MUSE v9.x system does not transmit Order Status Update transactions, but many customers use the ORU (result) message to create update message to their Order System.		
Validated By: Name: Role: Date:		

MUSE Final Results on ADT and Orders Interface

Final Results for EKG

Use the following table template to build and customize your own table to collect test results for messages and event types from your HIS/EMS to the MUSE system.

Final Result – EKG on ADT Interface and Orders Interface (Test 9)

HIS/EMR View/Print	PASS/FAIL/NA	Comments
<p>Patient ID: Last, First Name: Study Date: Test Instruction:</p> <ol style="list-style-type: none"> 1. On the MUSE system, attach order to study. 2. Save update. 3. Confirm and route to HL7 device. 		
<p>System: <i>(Enter name of HIS/EMR system where Result is expected to post. If Result message is to post to multiple systems, create a form for each system.)</i></p>		
<p>Format: <i>(Enter type of Result information sent to the MUSE system, for example, Discrete Test Data, Test Summary, URL link to MUSE Web, Embedded waveform.)</i></p>		
<p>Hospital Requirements for Text Results <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i></p>		
Exam Date/Time valued at beginning of Text Summary		
<p>Hospital Requirements for URL <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i></p>		
When Image icon is selected, the PDF report for the patient is displayed.		
User is not prompted to enter Login or Password to view URL.		

Final Result – EKG on ADT Interface and Orders Interface (Test 9) (cont'd.)

HIS/EMR View/Print	PASS/FAIL/NA	Comments
Hospital Requirements for Embedded Waveform <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
If result report contains multiple pages, each page is displayed.		
Hospital Requirements for Other <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Report Status is Preliminary.		
Order Status is updated. NOTE: The MUSE v9.x system does not transmit Order Status Update transactions, but many customers use the ORU (result) message to create update message to their Order System.		
Validated By: Name: Role: Date:		

Final Results for HiRes

Use the following table template to build and customize your own table to collect test results for messages and event types from your HIS/EMS to the MUSE system.

Final Result – HiRes on ADT Interface and Orders Interface (Test 10)

HIS/EMR View/Print	PASS/FAIL/ NA	Comments
Patient ID: Last, First Name: Study Date: Test Instruction: <ol style="list-style-type: none"> 1. On the MUSE system, attach order to study. 2. Save update. 3. Confirm and route to HL7 device. 		
System: <i>(Enter name of HIS/EMR system where Result is expected to post. If Result message is to post to multiple systems, create a form for each system.)</i>		
Format: <i>(Enter type of Result information sent to the MUSE system, for example, Discrete Test Data, Test Summary, URL link to MUSE Web, Embedded waveform.)</i>		
Hospital Requirements for Text Results <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Exam Date/Time valued at beginning of Text Summary		
Hospital Requirements for URL <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
User is not prompted to enter Login or Password to view URL.		

Final Result – HiRes on ADT Interface and Orders Interface (Test 10) (cont'd.)

HIS/EMR View/Print	PASS/FAIL/NA	Comments
Hospital Requirements for Embedded Waveform <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
If result report contains multiple pages, each page is displayed.		
Hospital Requirements for Other <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Report Status is Preliminary.		
Order Status is updated. NOTE: The MUSE v9.x system does not transmit Order Status Update transactions, but many customers use the ORU (result) message to create update message to their Order System.		
Validated By: Name: Role: Date:		

Final Results for Holter

Use the following table template to build and customize your own table to collect test results for messages and event types from your HIS/EMS to the MUSE system.

Final Result – Holter on ADT Interface and Orders Interface (Test 11)

HIS/EMR View/Print	PASS/FAIL/ NA	Comments
Patient ID: Last, First Name: Study Date: Test Instruction: <ol style="list-style-type: none"> 1. On the MUSE system, attach order to study. 2. Save update. 3. Confirm and route to HL7 device. 		
System: <i>(Enter name of HIS/EMR system where Result is expected to post. If Result message is to post to multiple systems, create a form for each system.)</i>		
Format: <i>(Enter type of Result information sent to the MUSE system, for example, Discrete Test Data, Test Summary, URL link to MUSE Web, Embedded waveform.)</i>		
Hospital Requirements for Text Results <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Exam Date/Time valued at beginning of Text Summary		
Hospital Requirements for URL <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
User is not prompted to enter Login or Password to view URL.		

Final Result – Holter on ADT Interface and Orders Interface (Test 11) (cont'd.)

HIS/EMR View/Print	PASS/FAIL/ NA	Comments
Hospital Requirements for Embedded Waveform <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
If result report contains multiple pages, each page is displayed.		
Hospital Requirements for Other <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Report Status is Preliminary.		
Order Status is updated. NOTE: The MUSE v9.x system does not transmit Order Status Update transactions, but many customers use the ORU (result) message to create update message to their Order System.		
Validated By: Name: Role: Date:		

Final Results for Stress

Use the following table template to build and customize your own table to collect test results for messages and event types from your HIS/EMS to the MUSE system.

Final Result – Stress on ADT Interface and Orders Interface (Test 12)

HIS/EMR View/Print	PASS/FAIL/NA	Comments
<p>Patient ID: Last, First Name: Study Date: Test Instruction:</p> <ol style="list-style-type: none"> 1. On the MUSE system, attach order to study. 2. Save update. 3. Confirm and route to HL7 device. 		
<p>System: <i>(Enter name of HIS/EMR system where Result is expected to post. If Result message is to post to multiple systems, create a form for each system.)</i></p>		
<p>Format: <i>(Enter type of Result information sent to the MUSE system, for example, Discrete Test Data, Test Summary, URL link to MUSE Web, Embedded waveform.)</i></p>		
<p>Hospital Requirements for Text Results <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i></p>		
Exam Date/Time valued at beginning of Text Summary		
<p>Hospital Requirements for URL <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i></p>		
When Image icon is selected, the PDF report for the patient is displayed.		
User is not prompted to enter Login or Password to view URL.		

Final Result – Stress on ADT Interface and Orders Interface (Test 12) (cont'd.)

HIS/EMR View/Print	PASS/FAIL/NA	Comments
Hospital Requirements for Embedded Waveform <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
If result report contains multiple pages, each page is displayed.		
Hospital Requirements for Other <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Report Status is Preliminary.		
Order Status is updated. NOTE: The MUSE v9.x system does not transmit Order Status Update transactions, but many customers use the ORU (result) message to create update message to their Order System.		
Validated By: Name: Role: Date:		

MUSE Corrected Results on ADT and Orders Interfaces

Corrected Result for EKG

Use the following table template to build and customize your own table to collect test results for messages and event types from your HIS/EMS to the MUSE system.

Corrected Result – EKG on ADT and Orders Interfaces (Test 13)

HIS/EMR View/Print	PASS/FAIL/NA	Comments
Patient ID: Last, First Name: Study Date: Test Instruction: <ol style="list-style-type: none"> 1. On the MUSE system, open the confirmed study. 2. Add free text to the interpretation section. 3. Confirm and route to HL7 device. 		
System: <i>(Enter name of HIS/EMR system where Result is expected to post. If Result message is to post to multiple systems, create a form for each system.)</i>		
Format: <i>(Enter type of Result information sent to the MUSE system, for example, Discrete Test Data, Test Summary, URL link to MUSE Web, Embedded waveform.)</i>		
Hospital Requirements for Text Results <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Exam Date/Time valued at beginning of Text Summary		
Confirmed by Date/Time valued or Reconfirmed by Date/Time valued		
Text entered for correction valued		
Hospital Requirements for URL <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
User is not prompted to enter Login or Password to view URL.		

Corrected Result – EKG on ADT and Orders Interfaces (Test 13) (cont'd.)

HIS/EMR View/Print	PASS/FAIL/NA	Comments
Hospital Requirements for Embedded Waveform <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
If result report contains multiple pages, each page is displayed.		
Hospital Requirements for Other <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Report Status is Preliminary.		
Order Status is updated. NOTE: The MUSE v9.x system does not transmit Order Status Update transactions, but many customers use the ORU (result) message to create update message to their Order System.		
Validated By: Name: Role: Date:		

Corrected Result for HiRes

Use the following table template to build and customize your own table to collect test results for messages and event types from your HIS/EMS to the MUSE system.

Corrected Result – HiRes on ADT and Orders Interfaces (Test 14)

HIS/EMR View/Print	PASS/FAIL/NA	Comments
Patient ID: Last, First Name: Study Date: Test Instruction: <ol style="list-style-type: none"> 1. On the MUSE system, open the confirmed study. 2. Add free text to the interpretation section. 3. Confirm and route to HL7 device. 		
System: <i>(Enter name of HIS/EMR system where Result is expected to post. If Result message is to post to multiple systems, create a form for each system.)</i>		
Format: <i>(Enter type of Result information sent to the MUSE system, for example, Discrete Test Data, Test Summary, URL link to MUSE Web, Embedded waveform.)</i>		
Hospital Requirements for Text Results <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Exam Date/Time valued at beginning of Text Summary		
Confirmed by Date/Time valued or Reconfirmed by Date/Time valued		
Text entered for correction valued		
Hospital Requirements for URL <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
User is not prompted to enter Login or Password to view URL.		

Corrected Result – HiRes on ADT and Orders Interfaces (Test 14) (cont'd.)

HIS/EMR View/Print	PASS/FAIL/NA	Comments
Hospital Requirements for Embedded Waveform <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
If result report contains multiple pages, each page is displayed.		
Hospital Requirements for Other <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Report Status is Preliminary.		
Order Status is updated. NOTE: The MUSE v9.x system does not transmit Order Status Update transactions, but many customers use the ORU (result) message to create update message to their Order System.		
Validated By: Name: Role: Date:		

Corrected Result for Holter

Use the following table template to build and customize your own table to collect test results for messages and event types from your HIS/EMS to the MUSE system.

Corrected Result – Holter on ADT and Orders Interfaces (Test 15)

HIS/EMR View/Print	PASS/FAIL/ NA	Comments
Patient ID: Last, First Name: Study Date: Test Instruction: <ol style="list-style-type: none"> 1. On the MUSE system, open the confirmed study. 2. Add free text to the interpretation section. 3. Confirm and route to HL7 device. 		
System: <i>(Enter name of HIS/EMR system where Result is expected to post. If Result message is to post to multiple systems, create a form for each system.)</i>		
Format: <i>(Enter type of Result information sent to the MUSE system, for example, Discrete Test Data, Test Summary, URL link to MUSE Web, Embedded waveform.)</i>		
Hospital Requirements for Text Results <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Exam Date/Time valued at beginning of Text Summary		
Confirmed by Date/Time valued or Reconfirmed by Date/Time valued		
Text entered for correction valued		
Hospital Requirements for URL <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
User is not prompted to enter Login or Password to view URL.		

Corrected Result – Holter on ADT and Orders Interfaces (Test 15) (cont'd.)

HIS/EMR View/Print	PASS/FAIL/NA	Comments
Hospital Requirements for Embedded Waveform <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
If result report contains multiple pages, each page is displayed.		
Hospital Requirements for Other <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Report Status is Preliminary.		
Order Status is updated. NOTE: The MUSE v9.x system does not transmit Order Status Update transactions, but many customers use the ORU (result) message to create update message to their Order System.		
Validated By: Name: Role: Date:		

Corrected Result for Stress

Use the following table template to build and customize your own table to collect test results for messages and event types from your HIS/EMS to the MUSE system.

Corrected Result – Stress on ADT and Orders Interfaces (Test 16)

HIS/EMR View/Print	PASS/FAIL/NA	Comments
Patient ID: Last, First Name: Study Date: Test Instruction: <ol style="list-style-type: none"> 1. On the MUSE system, open the confirmed study. 2. Add free text to the interpretation section. 3. Confirm and route to HL7 device. 		
System: <i>(Enter name of HIS/EMR system where Result is expected to post. If Result message is to post to multiple systems, create a form for each system.)</i>		
Format: <i>(Enter type of Result information sent to the MUSE system, for example, Discrete Test Data, Test Summary, URL link to MUSE Web, Embedded waveform.)</i>		
Hospital Requirements for Text Results <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Exam Date/Time valued at beginning of Text Summary		
Confirmed by Date/Time valued or Reconfirmed by Date/Time valued		
Text entered for correction valued		
Hospital Requirements for URL <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
User is not prompted to enter Login or Password to view URL.		

Corrected Result – Stress on ADT and Orders Interfaces (Test 16) (cont'd.)

HIS/EMR View/Print	PASS/FAIL/ NA	Comments
Hospital Requirements for Embedded Waveform <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
If result report contains multiple pages, each page is displayed.		
Hospital Requirements for Other <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Report Status is Preliminary.		
Order Status is updated. NOTE: The MUSE v9.x system does not transmit Order Status Update transactions, but many customers use the ORU (result) message to create update message to their Order System.		
Validated By: Name: Role: Date:		



Results and Financials Test Plan Templates

Introduction

The information in this test plan template is designed to be a guide or starting point for you to use as you develop the test plans for your hospital. You need to review and revise the testing information presented here to meet your hospital's workflow and data exchange requirements.

The testing templates presented in this section are set up to record the following result statuses: Preliminary results, Demographic Complete results, Final results, and Corrected results. Each result status has templates for the following test types: EKG, Hi-Res, Holter, and Stress.

The following links direct you to the testing templates for the related result statuses:

- ["MUSE Preliminary Results and Billing " on page 246](#)
- ["MUSE Demographic Complete Results and Billing" on page 254](#)
- ["MUSE Final Results and Billing " on page 261](#)
- ["MUSE Corrected Results and Billing " on page 269](#)

The testing templates for Results and Billing are for those customers who have both the ADT and Orders interfaces.

In many cases, the customer's information system department will have established testing plan materials in place to use for data validation and integrated testing. In that case, they can choose not to use the test example included in this document.

If you choose to use the test plan templates in this document, first read [Chapter 9 "HL7 Interface Testing" on page 91](#). The document contains valuable information to consider when developing and customizing your test plans. It also contains instructions on how to validate the data fields that are sent from your hospital

information system (HIS) to the MUSE system. Keep the document handy as you will want to refer to it during testing.

NOTE:

To ensure the test mirrors production as closely as possible, it is strongly suggested that your hospital's registration staff perform the registration functions on your HIS for testing. Likewise, clinical or clerical staff that routinely enters orders for the tests supported on the MUSE system should perform the order functions on your HIS for testing. For testing purposes, confirm that all fields that are to be sent to the MUSE system are populated (such as, phone number, order comments, referring physician etc.).

When validating results sent from the MUSE system to your HIS, be sure to have clinicians (nurses, physicians, etc.), who will be viewing the results in production, validate that the result posted to the EMR contains the data from the result report on the MUSE system that they are expecting to view.

When validating billing sent from the MUSE system to your HIS, have the staff from your hospital and technical billing areas validate that the charges post are as expected and contain all data required to create an invoice.

The following table contains the information that you will be capturing for each test:

Type of Information to Record	Description
Pass/Fail/NA	Record one of the following valid values for the test: <ul style="list-style-type: none"> • PASS Indicates that the data field on the MUSE system contains the expected value. • FAIL Indicates that the data field on the MUSE system does not contain the expected value. The field could also be empty. • NA Indicates that a value for this data field was not or will not be sent from your HIS system.
Comments	Record any comments about the test results. Especially, capture any comments that can help clarify if a test did not pass.
Validated by	Record the name and role of the person who is validating that each data field is populated during the test. Also, record the date the validation was completed. For example, Molly Brown, HL7 Engineer, 15 December 2015.

MUSE Preliminary Results and Billing

Preliminary Results and Billing for EKG

Use the following table template to build and customize your own table to collect test results for messages and event types from your HIS/EMS to the MUSE system.

Preliminary Result – EKG (Test 1)

HIS/EMR View/Print	PASS/FAIL/NA	Comments
Patient ID: Last, First Name: Study Date: Test Instruction: <ol style="list-style-type: none"> 1. On the MUSE system, attach Order to Study. 2. Save Update. 3. Print result to HL7 device. 		
System: <i>(Enter name of HIS/EMR system where Result is expected to post. If the Result message is to post to multiple systems, create a form for each system.)</i>		
Format: <i>(Enter the type of Result information sent to the MUSE system, for example, Discrete Test Data, Test Summary, URL link to MUSE Web, Embedded waveform.)</i>		
Billing transaction received and posted successfully <i>(Enter name of Financial system where Billing is expected to post. If the Billing message is to post to multiple systems, create a form for each system.)</i>		
Hospital Requirements for Text Results <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Exam Date/Time valued at beginning of Text Summary		
Hospital Requirements for URL <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
User is not prompted to enter Login or Password to view URL.		

Preliminary Result – EKG (Test 1) (cont'd.)

HIS/EMR View/Print	PASS/FAIL/ NA	Comments
Hospital Requirements for Embedded Waveform <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
If result report contains multiple pages, each page is displayed.		
Hospital Requirements for Other <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Report Status is Preliminary.		
Patient Change posts on Financial system.		
Validated By: Name: Role: Date:		

Preliminary Results and Billing for HiRes

Use the following table template to build and customize your own table to collect test results for messages and event types from your HIS/EMS to the MUSE system.

Preliminary Result – HiRes (Test 2)

HIS/EMR View/Print	PASS/FAIL/NA	Comments
Patient ID: Last, First Name: Study Date: Test Instruction: <ol style="list-style-type: none"> 1. On the MUSE system, attach Order to Study. 2. Save Update. 3. Print result to HL7 device. 		
System: <i>(Enter name of HIS/EMR system where Result is expected to post. If Result message is to post to multiple systems, create a form for each system.)</i>		
Format: <i>(Enter type of Result information sent to the MUSE system, for example, Discrete Test Data, Test Summary, URL link to MUSE Web, Embedded waveform.)</i>		
Billing transaction received and posted successfully <i>(Enter name of Financial system where Billing is expected to post. If the Billing message is to post to multiple systems, create a form for each system.)</i>		
Hospital Requirements for Text Results <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Exam Date/Time valued at beginning of Text Summary		
Hospital Requirements for URL <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
User is not prompted to enter Login or Password to view URL.		

Preliminary Result – HiRes (Test 2) (cont'd.)

HIS/EMR View/Print	PASS/FAIL/NA	Comments
Hospital Requirements for Embedded Waveform <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
If result report contains multiple pages, each page is displayed.		
Hospital Requirements for Other <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Report Status is Preliminary.		
Patient Change posts on Financial system.		
Validated By:		
Name:		
Role:		
Date:		

Preliminary Results and Billing for Holter

Use the following table template to build and customize your own table to collect test results for messages and event types from your HIS/EMS to the MUSE system.

Preliminary Result – Holter (Test 3)

HIS/EMR View/Print	PASS/FAIL/NA	Comments
Patient ID: Last, First Name: Study Date: Test Instruction: <ol style="list-style-type: none"> 1. On the MUSE system, attach Order to Study. 2. Save Update. 3. Print result to HL7 device. 		
System: <i>(Enter name of HIS/EMR system where Result is expected to post. If Result message is to post to multiple systems, create a form for each system.)</i>		
Format: <i>(Enter type of Result information sent to the MUSE system, for example, Discrete Test Data, Test Summary, URL link to MUSE Web, Embedded waveform.)</i>		
Billing transaction received and posted successfully <i>(Enter name of Financial system where Billing is expected to post. If the Billing message is to post to multiple systems, create a form for each system.)</i>		
Hospital Requirements for Text Results <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Exam Date/Time valued at beginning of Text Summary		
Hospital Requirements for URL <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
User is not prompted to enter Login or Password to view URL.		

Preliminary Result – Holter (Test 3) (cont'd.)

HIS/EMR View/Print	PASS/FAIL/ NA	Comments
Hospital Requirements for Embedded Waveform <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
If result report contains multiple pages, each page is displayed.		
Hospital Requirements for Other <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Report Status is Preliminary.		
Patient Changes posts on Financial system.		
Validated By: Name: Role: Date:		

Preliminary Results and Billing for Stress

Use the following table template to build and customize your own table to collect test results for messages and event types from your HIS/EMS to the MUSE system.

Test 4- reliminary Result – Stress (Test 4)

HIS/EMR View/Print	PASS/FAIL/ NA	Comments
Patient ID: Last, First Name: Study Date: Test Instruction: <ol style="list-style-type: none"> 1. On the MUSE system, attach Order to Study. 2. Save Update. 3. Print result to HL7 device. 		
System: <i>(Enter name of HIS/EMR system where Result is expected to post. If Result message is to post to multiple systems, create a form for each system.)</i>		
Format: <i>(Enter type of Result information sent to the MUSE system, for example, Discrete Test Data, Test Summary, URL link to MUSE Web, Embedded waveform.)</i>		
Hospital Requirements for Text Results <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Exam Date/Time valued at beginning of Text Summary		
Hospital Requirements for URL <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
User is not prompted to enter Login or Password to view URL.		
Hospital Requirements for Embedded Waveform <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		

Test 4- reliminary Result – Stress (Test 4) (cont'd.)

HIS/EMR View/Print	PASS/FAIL/NA	Comments
When Image icon is selected, the PDF report for the patient is displayed.		
If result report contains multiple pages, each page is displayed.		
Hospital Requirements for Other <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Report Status is Preliminary.		
Patient Change posts on Financial system.		
Validated By: Name: Role: Date:		

MUSE Demographic Complete Results and Billing

Demographic Complete Results and Billing for EKG

Use the following table template to build and customize your own table to collect test results for messages and event types from your HIS/EMS to the MUSE system.

Demographic Complete Result – EKG (Test 5)

HIS/EMR View/Print	PASS/FAIL/NA	Comments
Patient ID: Last, First Name: Study Date: Test Instruction: 1. On the MUSE system, attach Order to Study. 2. Save as Demographic Complete.		
System: <i>(Enter name of HIS/EMR system where Result is expected to post. If the Result message is to post to multiple systems, create a form for each system.)</i>		

Demographic Complete Result – EKG (Test 5) (cont'd.)

HIS/EMR View/Print	PASS/FAIL/NA	Comments
Format: (Enter the type of Result information sent to the MUSE system, for example, Discrete Test Data, Test Summary, URL link to MUSE Web, Embedded waveform.)		
Billing transaction received and posted successfully (Enter name of Financial system where Billing is expected to post. If the Billing message is to post to multiple systems, create a form for each system.)		
<p style="text-align: center;">Hospital Requirements for Text Results (Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</p>		
Exam Date/Time valued at beginning of Text Summary		
<p style="text-align: center;">Hospital Requirements for URL (Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</p>		
When Image icon is selected, the PDF report for the patient is displayed.		
User is not prompted to enter Login or Password to view URL.		
<p style="text-align: center;">Hospital Requirements for Embedded Waveform (Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</p>		
When Image icon is selected, the PDF report for the patient is displayed.		
If result report contains multiple pages, each page is displayed.		

Demographic Complete Result – EKG (Test 5) (cont'd.)

HIS/EMR View/Print	PASS/FAIL/ NA	Comments
Hospital Requirements for Other <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Report Status is Preliminary.		
Patient Change posts on Financial system.		
Validated By:		
Name:		
Role:		
Date:		

Demographic Complete Results and Billing for HiRes

Use the following table template to build and customize your own table to collect test results for messages and event types from your HIS/EMS to the MUSE system.

Demographic Complete Result – HiRes (Test 6)

HIS/EMR View/Print	PASS/FAIL/ NA	Comments
Patient ID: Last, First Name: Study Date: Test Instruction: <ol style="list-style-type: none"> On the MUSE system, attach Order to Study. Save as Demographic Complete. Print result to HL7 device. 		
System: <i>(Enter name of HIS/EMR system where Result is expected to post. If Result message is to post to multiple systems, create a form for each system.)</i>		
Format: <i>(Enter type of Result information sent to the MUSE system, for example, Discrete Test Data, Test Summary, URL link to MUSE Web, Embedded waveform.)</i>		

Demographic Complete Result – HiRes (Test 6) (cont'd.)

HIS/EMR View/Print	PASS/FAIL/ NA	Comments
Billing transaction received and posted successfully <i>(Enter name of Financial system where Billing is expected to post. If the Billing message is to post to multiple systems, create a form for each system.)</i>		
<p align="center">Hospital Requirements for Text Results</p> <p align="center"><i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i></p>		
Exam Date/Time valued at beginning of Text Summary		
<p align="center">Hospital Requirements for URL</p> <p align="center"><i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i></p>		
When Image icon is selected, the PDF report for the patient is displayed.		
User is not prompted to enter Login or Password to view URL.		
<p align="center">Hospital Requirements for Embedded Waveform</p> <p align="center"><i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i></p>		
When Image icon is selected, the PDF report for the patient is displayed.		
If result report contains multiple pages, each page is displayed.		
<p align="center">Hospital Requirements for Other</p> <p align="center"><i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i></p>		
Report Status is Preliminary.		
Patient Change posts on Financial system.		

Demographic Complete Result – HiRes (Test 6) (cont'd.)

HIS/EMR View/Print	PASS/FAIL/NA	Comments
Validated By: Name: Role: Date:		

Demographic Complete Results and Billing for Holter

Use the following table template to build and customize your own table to collect test results for messages and event types from your HIS/EMS to the MUSE system.

Demographic Complete Result – Holter (Test 7)

HIS/EMR View/Print	PASS/FAIL/NA	Comments
Patient ID: Last, First Name: Study Date: Test Instruction: <ol style="list-style-type: none"> On the MUSE system, attach Order to Study. Save as Demographic Complete. Print result to HL7 device. 		
System: <i>(Enter name of HIS/EMR system where Result is expected to post. If Result message is to post to multiple systems, create a form for each system.)</i>		
Format: <i>(Enter type of Result information sent to the MUSE system, for example, Discrete Test Data, Test Summary, URL link to MUSE Web, Embedded waveform.)</i>		
Billing transaction received and posted successfully <i>(Enter name of Financial system where Billing is expected to post. If the Billing message is to post to multiple systems, create a form for each system.)</i>		
Hospital Requirements for Text Results <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Exam Date/Time valued at beginning of Text Summary		

Demographic Complete Result – Holter (Test 7) (cont'd.)

HIS/EMR View/Print	PASS/FAIL/NA	Comments
<p align="center">Hospital Requirements for URL <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i></p>		
When Image icon is selected, the PDF report for the patient is displayed.		
User is not prompted to enter Login or Password to view URL.		
<p align="center">Hospital Requirements for Embedded Waveform <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i></p>		
When Image icon is selected, the PDF report for the patient is displayed.		
If result report contains multiple pages, each page is displayed.		
<p align="center">Hospital Requirements for Other <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i></p>		
Report Status is Preliminary.		
Patient Changes posts on Financial system.		
<p>Validated By: Name: Role: Date:</p>		

Demographic Complete Results and Billing for Stress

Use the following table template to build and customize your own table to collect test results for messages and event types from your HIS/EMS to the MUSE system.

Demographic Complete Result – Stress (Test 8)

HIS/EMR View/Print	PASS/FAIL/NA	Comments
Patient ID: Last, First Name: Study Date: Test Instruction: <ol style="list-style-type: none"> On the MUSE system, attach Order to Study. Save as Demographic Complete. Print result to HL7 device. 		
System: <i>(Enter name of HIS/EMR system where Result is expected to post. If Result message is to post to multiple systems, create a form for each system.)</i>		
Format: <i>(Enter type of Result information sent to the MUSE system, for example, Discrete Test Data, Test Summary, URL link to MUSE Web, Embedded waveform.)</i>		
Hospital Requirements for Text Results <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Exam Date/Time valued at beginning of Text Summary		
Hospital Requirements for URL <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
User is not prompted to enter Login or Password to view URL.		

Demographic Complete Result – Stress (Test 8) (cont'd.)

HIS/EMR View/Print	PASS/FAIL/ NA	Comments
Hospital Requirements for Embedded Waveform <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
If result report contains multiple pages, each page is displayed.		
Hospital Requirements for Other <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Report Status is Preliminary.		
Patient Change posts on Financial system.		
Validated By:		
Name:		
Role:		
Date:		

MUSE Final Results and Billing

Final Results and Billing for EKG

Use the following table template to build and customize your own table to collect test results for messages and event types from your HIS/EMS to the MUSE system.

Final Result – EKG (Test 9)

HIS/EMR View/Print	PASS/FAIL/ NA	Comments
Patient ID: Last, First Name: Study Date: Test Instruction: <ol style="list-style-type: none"> 1. On the MUSE system, attach Order to Study. 2. Save Update. 3. Confirm and route to HL7 device. 		
System: <i>(Enter name of HIS/EMR system where Result is expected to post. If the Result message is to post to multiple systems, create a form for each system.)</i>		
Format: <i>(Enter the type of Result information sent to the MUSE system, for example, Discrete Test Data, Test Summary, URL link to MUSE Web, Embedded waveform.)</i>		
Billing transaction received and posted successfully <i>(Enter name of Financial system where Billing is expected to post. If the Billing message is to post to multiple systems, create a form for each system.)</i>		
Hospital Requirements for Text Results <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Exam Date/Time valued at beginning of Text Summary		
Hospital Requirements for URL <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
User is not prompted to enter Login or Password to view URL.		

Final Result – EKG (Test 9) (cont'd.)

HIS/EMR View/Print	PASS/FAIL/NA	Comments
Hospital Requirements for Embedded Waveform <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
If result report contains multiple pages, each page is displayed.		
Hospital Requirements for Other <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Report Status is Preliminary.		
Patient Change posts on Financial system.		
Validated By: Name: Role: Date:		

Final Results and Billing for HiRes

Use the following table template to build and customize your own table to collect test results for messages and event types from your HIS/EMS to the MUSE system.

Final Result – HiRes (Test 10)

HIS/EMR View/Print	PASS/FAIL/NA	Comments
Patient ID: Last, First Name: Study Date: Test Instruction: <ol style="list-style-type: none"> On the MUSE system, attach Order to Study. Save Update. Confirm and route to HL7 device. 		
System: <i>(Enter name of HIS/EMR system where Result is expected to post. If Result message is to post to multiple systems, create a form for each system.)</i>		
Format: <i>(Enter type of Result information sent to the MUSE system, for example, Discrete Test Data, Test Summary, URL link to MUSE Web, Embedded waveform.)</i>		
Billing transaction received and posted successfully <i>(Enter name of Financial system where Billing is expected to post. If the Billing message is to post to multiple systems, create a form for each system.)</i>		
Hospital Requirements for Text Results <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Exam Date/Time valued at beginning of Text Summary		
Hospital Requirements for URL <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
User is not prompted to enter Login or Password to view URL.		

Final Result – HiRes (Test 10) (cont'd.)

HIS/EMR View/Print	PASS/FAIL/ NA	Comments
Hospital Requirements for Embedded Waveform <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
If result report contains multiple pages, each page is displayed.		
Hospital Requirements for Other <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Report Status is Preliminary.		
Patient Change posts on Financial system.		
Validated By: Name: Role: Date:		

Final Results and Billing for Holter

Use the following table template to build and customize your own table to collect test results for messages and event types from your HIS/EMS to the MUSE system.

Final Result – Holter (Test 11)

HIS/EMR View/Print	PASS/FAIL/NA	Comments
Patient ID: Last, First Name: Study Date: Test Instruction: <ol style="list-style-type: none"> 1. On the MUSE system, attach Order to Study. 2. Save Update. 3. Confirm and route to HL7 device. 		
System: <i>(Enter name of HIS/EMR system where Result is expected to post. If Result message is to post to multiple systems, create a form for each system.)</i>		
Format: <i>(Enter type of Result information sent to the MUSE system, for example, Discrete Test Data, Test Summary, URL link to MUSE Web, Embedded waveform.)</i>		
Billing transaction received and posted successfully <i>(Enter name of Financial system where Billing is expected to post. If the Billing message is to post to multiple systems, create a form for each system.)</i>		
Hospital Requirements for Text Results <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Exam Date/Time valued at beginning of Text Summary		
Hospital Requirements for URL <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
User is not prompted to enter Login or Password to view URL.		

Final Result – Holter (Test 11) (cont'd.)

HIS/EMR View/Print	PASS/FAIL/ NA	Comments
Hospital Requirements for Embedded Waveform <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
If result report contains multiple pages, each page is displayed.		
Hospital Requirements for Other <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Report Status is Preliminary.		
Patient Changes posts on Financial system.		
Validated By: Name: Role: Date:		

Final Results and Billing for Stress

Use the following table template to build and customize your own table to collect test results for messages and event types from your HIS/EMS to the MUSE system.

Final Result – Stress (Test 12)

HIS/EMR View/Print	PASS/FAIL/ NA	Comments
Patient ID: Last, First Name: Study Date: Test Instruction: <ol style="list-style-type: none"> 1. On the MUSE system, attach Order to Study. 2. Save Update. 3. Confirm and route to HL7 device. 		
System: <i>(Enter name of HIS/EMR system where Result is expected to post. If Result message is to post to multiple systems, create a form for each system.)</i>		
Format: <i>(Enter type of Result information sent to the MUSE system, for example, Discrete Test Data, Test Summary, URL link to MUSE Web, Embedded waveform.)</i>		
Hospital Requirements for Text Results <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Exam Date/Time valued at beginning of Text Summary		
Hospital Requirements for URL <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
User is not prompted to enter Login or Password to view URL.		
Hospital Requirements for Embedded Waveform <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		

Final Result – Stress (Test 12) (cont'd.)

HIS/EMR View/Print	PASS/FAIL/NA	Comments
When Image icon is selected, the PDF report for the patient is displayed.		
If result report contains multiple pages, each page is displayed.		
Hospital Requirements for Other		
<i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Report Status is Preliminary.		
Patient Change posts on Financial system.		
Validated By: Name: Role: Date:		

MUSE Corrected Results and Billing

Corrected Results and Billing for EKG

Use the following table template to build and customize your own table to collect test results for messages and event types from your HIS/EMS to the MUSE system.

Corrected Result – EKG (Test 13)

HIS/EMR View/Print	PASS/FAIL/ NA	Comments
Patient ID: Last, First Name: Study Date: Test Instruction: <ol style="list-style-type: none"> On the MUSE system, open the confirmed study. Add free text in the interpretation section. Confirm and route to HL7 device. 		
System: <i>(Enter name of HIS/EMR system where Result is expected to post. If the Result message is to post to multiple systems, create a form for each system.)</i>		
Format: <i>(Enter the type of Result information sent to the MUSE system, for example, Discrete Test Data, Test Summary, URL link to MUSE Web, Embedded waveform.)</i>		
Billing transaction received and posted successfully <i>(Enter name of Financial system where Billing is expected to post. If the Billing message is to post to multiple systems, create a form for each system.)</i>		
Hospital Requirements for Text Results <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Exam Date/Time valued at beginning of Text Summary		
Confirmed by Date/Time or Reconfirmed Date/Time valued.		
Text entered for correction valued.		
Hospital Requirements for URL <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
User is not prompted to enter Login or Password to view URL.		

Corrected Result – EKG (Test 13) (cont'd.)

HIS/EMR View/Print	PASS/FAIL/ NA	Comments
<p align="center">Hospital Requirements for Embedded Waveform <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i></p>		
When Image icon is selected, the PDF report for the patient is displayed.		
If result report contains multiple pages, each page is displayed.		
<p align="center">Hospital Requirements for Other <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i></p>		
Report Status is Preliminary.		
Verify duplicate charge di not post to Financial system.		
<p>Validated By: Name: Role: Date:</p>		

Corrected Results and Billing for HiRes

Use the following table template to build and customize your own table to collect test results for messages and event types from your HIS/EMS to the MUSE system.

Corrected Result – HiRes (Test 14)

HIS/EMR View/Print	PASS/FAIL/NA	Comments
Patient ID: Last, First Name: Study Date: Test Instruction: <ol style="list-style-type: none"> On the MUSE system, open the confirmed study. Add free text in the interpretation section. Confirm and route to HL7 device. 		
System: <i>(Enter name of HIS/EMR system where Result is expected to post. If Result message is to post to multiple systems, create a form for each system.)</i>		
Format: <i>(Enter type of Result information sent to the MUSE system, for example, Discrete Test Data, Test Summary, URL link to MUSE Web, Embedded waveform.)</i>		
Billing transaction received and posted successfully <i>(Enter name of Financial system where Billing is expected to post. If the Billing message is to post to multiple systems, create a form for each system.)</i>		
Hospital Requirements for Text Results <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Exam Date/Time valued at beginning of Text Summary		
Confirmed by Date/Time or Reconfirmed Date/Time valued.		
Text entered for correction valued.		
Hospital Requirements for URL <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
User is not prompted to enter Login or Password to view URL.		

Corrected Result – HiRes (Test 14) (cont'd.)

HIS/EMR View/Print	PASS/FAIL/NA	Comments
Hospital Requirements for Embedded Waveform <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
If result report contains multiple pages, each page is displayed.		
Hospital Requirements for Other <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Report Status is Preliminary.		
Verify duplicate charge di not post to Financial system.		
Validated By: Name: Role: Date:		

Corrected Results and Billing for Holter

Use the following table template to build and customize your own table to collect test results for messages and event types from your HIS/EMS to the MUSE system.

Corrected Result – Holter (Test 15)

HIS/EMR View/Print	PASS/FAIL/NA	Comments
Patient ID: Last, First Name: Study Date: Test Instruction: <ol style="list-style-type: none"> 1. On the MUSE system, open the confirmed study. 2. Add free text in the interpretation section. 3. Confirm and route to HL7 device. 		
System: <i>(Enter name of HIS/EMR system where Result is expected to post. If Result message is to post to multiple systems, create a form for each system.)</i>		
Format: <i>(Enter type of Result information sent to the MUSE system, for example, Discrete Test Data, Test Summary, URL link to MUSE Web, Embedded waveform.)</i>		
Billing transaction received and posted successfully <i>(Enter name of Financial system where Billing is expected to post. If the Billing message is to post to multiple systems, create a form for each system.)</i>		
Hospital Requirements for Text Results <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Exam Date/Time valued at beginning of Text Summary		
Confirmed by Date/Time or Reconfirmed Date/Time valued.		
Text entered for correction valued.		
Hospital Requirements for URL <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
User is not prompted to enter Login or Password to view URL.		

Corrected Result – Holter (Test 15) (cont'd.)

HIS/EMR View/Print	PASS/FAIL/NA	Comments
Hospital Requirements for Embedded Waveform <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
If result report contains multiple pages, each page is displayed.		
Hospital Requirements for Other <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Report Status is Preliminary.		
Verify duplicate charge di not post to Financial system.		
Validated By:		
Name:		
Role:		
Date:		

Corrected Results and Billing for Stress

Use the following table template to build and customize your own table to collect test results for messages and event types from your HIS/EMS to the MUSE system.

Corrected Result – Stress (Test 16)

HIS/EMR View/Print	PASS/FAIL/NA	Comments
Patient ID: Last, First Name: Study Date: Test Instruction: <ol style="list-style-type: none"> On the MUSE system, open the confirmed study. Add free text in the interpretation section. Confirm and route to HL7 device. 		
System: <i>(Enter name of HIS/EMR system where Result is expected to post. If Result message is to post to multiple systems, create a form for each system.)</i>		
Format: <i>(Enter type of Result information sent to the MUSE system, for example, Discrete Test Data, Test Summary, URL link to MUSE Web, Embedded waveform.)</i>		
Hospital Requirements for Text Results <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
Exam Date/Time valued at beginning of Text Summary		
Confirmed by Date/Time or Reconfirmed Date/Time valued.		
Text entered for correction valued.		
Hospital Requirements for URL <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		
When Image icon is selected, the PDF report for the patient is displayed.		
User is not prompted to enter Login or Password to view URL.		
Hospital Requirements for Embedded Waveform <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i>		

Corrected Result – Stress (Test 16) (cont'd.)

HIS/EMR View/Print	PASS/FAIL/ NA	Comments
When Image icon is selected, the PDF report for the patient is displayed.		
If result report contains multiple pages, each page is displayed.		
<p align="center">Hospital Requirements for Other <i>(Enter specific hospital-requested requirements. See the example in the next row. Customized PRN for your hospital's requirements.)</i></p>		
Report Status is Preliminary.		
Verify duplicate charge di not post to Financial system.		
<p>Validated By: Name: Role: Date:</p>		



GE Medical Systems
Information Technologies, Inc.
8200 West Tower Avenue
Milwaukee, WI 53223 USA
Tel: +1 414 355 5000
+1 800 558 7044 (US Only)
Fax: +1 414 355 3790



GE Medical Systems
Information Technologies GmbH
Munzinger Straße 5
79111 Freiburg Germany
Tel: +49 761 45 43 -0
Fax: +49 761 45 43 -233

Asia Headquarters

GE Medical Systems
Information Technologies, Inc.
Asia; GE (China) Co., Ltd.
1 Huatuo Road
Zhangjiang Hi-tech Park Pudong
Shanghai, People's Republic of China 201203
Tel: +86 21 3877 7888
Fax: +86 21 3877 7451

GE Medical Systems *Information Technologies, Inc.*, a General Electric Company, going to market as GE Healthcare.

www.gehealthcare.com

