



KAISER PERMANENTE®

DOCUMENT NUMBER:
DOCUMENT TITLE:
DOCUMENT NOTES:

LOCATION:	VERSION:
DOC TYPE:	STATUS:

EFFECTIVE DATE:	NEXT REVIEW DATE:
RELEASE DATE:	EXPIRATION DATE:

AUTHOR:	PREVIOUS NUMBER:
OWNER:	CHANGE NUMBER:

Calculating INR (International Normalized Ratio) for Prothrombin Time Test

Purpose This document provides instructions on how to manually calculate the INR and documenting the INR is correct and appropriately adjusted for every new lot of PT reagent, changes in types of reagent, or change in instrumentation.

Policy	<ul style="list-style-type: none">• The Prothrombin Time is reported in INR so that values will not vary depending on the laboratory performing the testing.• Each laboratory should establish its own patient population mean for each lot number of reagents used.• The assigned ISI is established by the reagent manufacturer and is unique for each lot number of reagents.• The assigned ISI is to be changed in the instrument for each new lot number of reagents.• The ISI has been determined by calibration against an International Reference Preparation according to the W.H.O. recommendation.• Whenever a new lot of PT reagent, changes in types of reagent, or change in instrumentation has been performed, there must be documentation that the calculation of the INR is correct and appropriate for the new ISI value.• The manual INR calculation check must be documented.
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Calculating INR (International Normalized Ratio) for Prothrombin Time Test

Workplace Safety	<p>All laboratory employees are expected to maintain a safe working environment and an injury-free workplace. Laboratory employees are responsible for their own safety, the safety of others and adhering to all departmental and medical center safety policies and procedures.</p> <ul style="list-style-type: none">• For standard precautions and safety practices in the laboratory; see LAMC-PPP-0123, specifically, but not limited to, equipment safety, proper body mechanics, sharps exposure and proper use of personal protective equipment (PPE).• For Universal Body Substance precautions, see LAMC-PP-0128, specifically, but not limited to, exposure to body fluids.• For proper hand-washing, see LAMC-PPP-0132, specifically, not limited to, proper hand-washing.• For proper infection control, see LAMC-PPP-0127, specifically, but not limited to, proper use of gloves.• For proper handling of regular and infectious waste, see LAMC-PPP-0129, specifically, but not limited to, proper disposal of regular and biohazardous waste.• For proper cleaning of work area, see LAMC-PPP-0130– Cleaning Work Areas.• For proper handling of chemicals and reagents, see the Chemical Hygiene Plan.• For proper storage and disposal of chemical hazardous waste, see LAMC-PPP-0134.
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Calculating INR (International Normalized Ratio) for Prothrombin Time Test, Continued

Procedure How to Manually Calculate INR

Step	Action
1	Obtain the results of the patient's Prothrombin time in seconds.
2	Calculate the ratio using the following formula: [Calculation of INR is performed automatically by the instrument] $\text{Ratio} = \frac{\text{Patient results}}{\text{Normal patient population mean}}$
3	Using the calculated ratio and the assigned ISI value for the lot of the Thromboplastin reagent, determine the INR using the following formula: $\text{INR} = \text{Ratio}^{\text{ISI}}$
4	Example: Patient seconds = 18.2 Normal Population mean = 13.0 ISI = 1.5 $\text{Ratio} = 18.2/13.0 = 1.4$ $\text{INR} = 1.4^{1.5} = 1.7$

Documenting the Calculation of the INR is Correct and Appropriate for the New ISI Value

Step	Action
1	Whenever a new lot of PT reagent, changes in types of reagent, or change in instrumentation has been performed, there must be documentation that the calculation of the INR is correct and appropriate for the new ISI value.
2	Using the ISI value assigned by the reagent manufacturer, manually calculate the INR value.
3	Compare the manually calculated INR value to the instrument INR value to ensure the instrument calculation of the INR is correct and appropriate for the new ISI value entered.
4	Save all applicable instrument printout(s), reagent insert(s), and documentation log sheet in the appropriate binder.

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Signature Manifest

Document Number: LAMC-PPP-0422

Revision: 02

Title: Diagnostica Stago STA Compact Calculating INR

Effective Date: 01 Jun 2018

All dates and times are in Pacific Standard Time.

Review: LAMC-PPP-0422 02 Diagnostica Stago STA Compact Calculating INR

Review

Name/Signature	Title	Date	Meaning/Reason
Julie Toti (K084521)	DIR AREA LAB	13 Oct 2017, 12:06:25 PM	Reviewed - Under Revision

Quick Approval

Approve Now

Name/Signature	Title	Date	Meaning/Reason
Rowena Pablico (O098499)	CLINICAL LAB SCIENTIST	01 Jun 2018, 10:01:31 AM	Approved

Review: LAMC-PPP-0422 02 Diagnostica Stago STA Compact Calculating INR

Review

Name/Signature	Title	Date	Meaning/Reason
Julie Toti (K084521)	DIR AREA LAB	02 Oct 2018, 04:09:23 PM	Reviewed

Review: LAMC-PPP-0422 02 Diagnostica Stago STA Compact Calculating INR

Review

Name/Signature	Title	Date	Meaning/Reason
Julie Toti (K084521)	DIR AREA LAB	27 Sep 2019, 04:09:03 PM	Reviewed

LAMC CLIA Director 6

CLIA Director Approval

Name/Signature	Title	Date	Meaning/Reason
Hedyeh Shafi (I086749)	Pathologist	18 Nov 2019, 10:21:40 AM	Approved

Set Effective Date

Name/Signature	Title	Date	Meaning/Reason
Matthew Jones (F754627)	Sr Systems Administrator	05 Dec 2019, 09:42:24 AM	Approved

Review: LAMC-PPP-0422 02 Diagnostica Stago STA Compact Calculating INR

Review

Name/Signature	Title	Date	Meaning/Reason
Julie Toti (K084521)	DIR AREA LAB	30 Sep 2020, 12:58:21 PM	Reviewed

Review: LAMC-PPP-0422 02 Diagnostica Stago STA Compact Calculating INR

Review

Name/Signature	Title	Date	Meaning/Reason
Julie Toti (K084521)	DIR AREA LAB	24 Sep 2021, 03:12:35 PM	Reviewed