



NONMEM® - A Programmer point of view

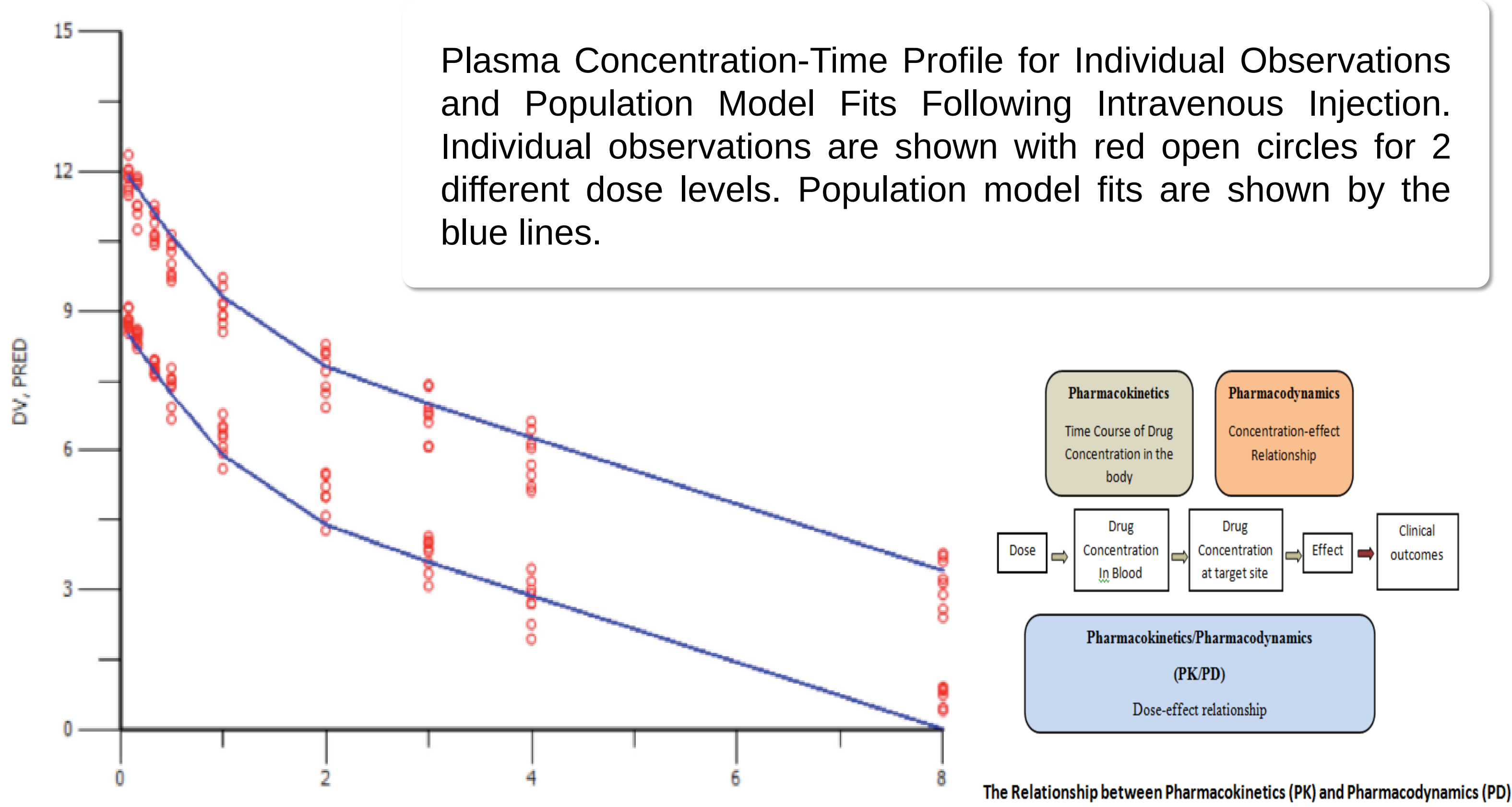
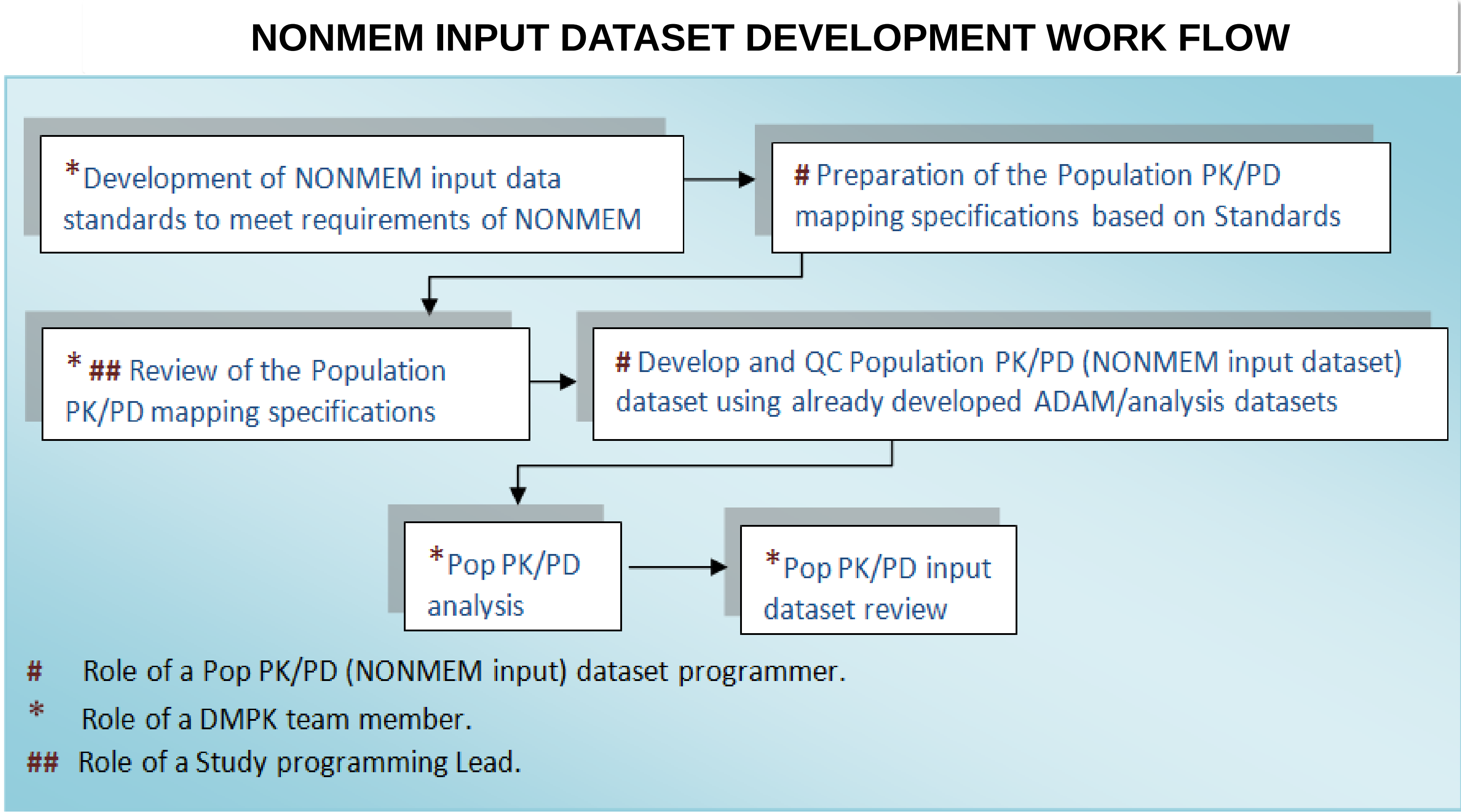


Raghu Kishor Koukuntla, Cytel, Hyderabad, India

INTRODUCTION

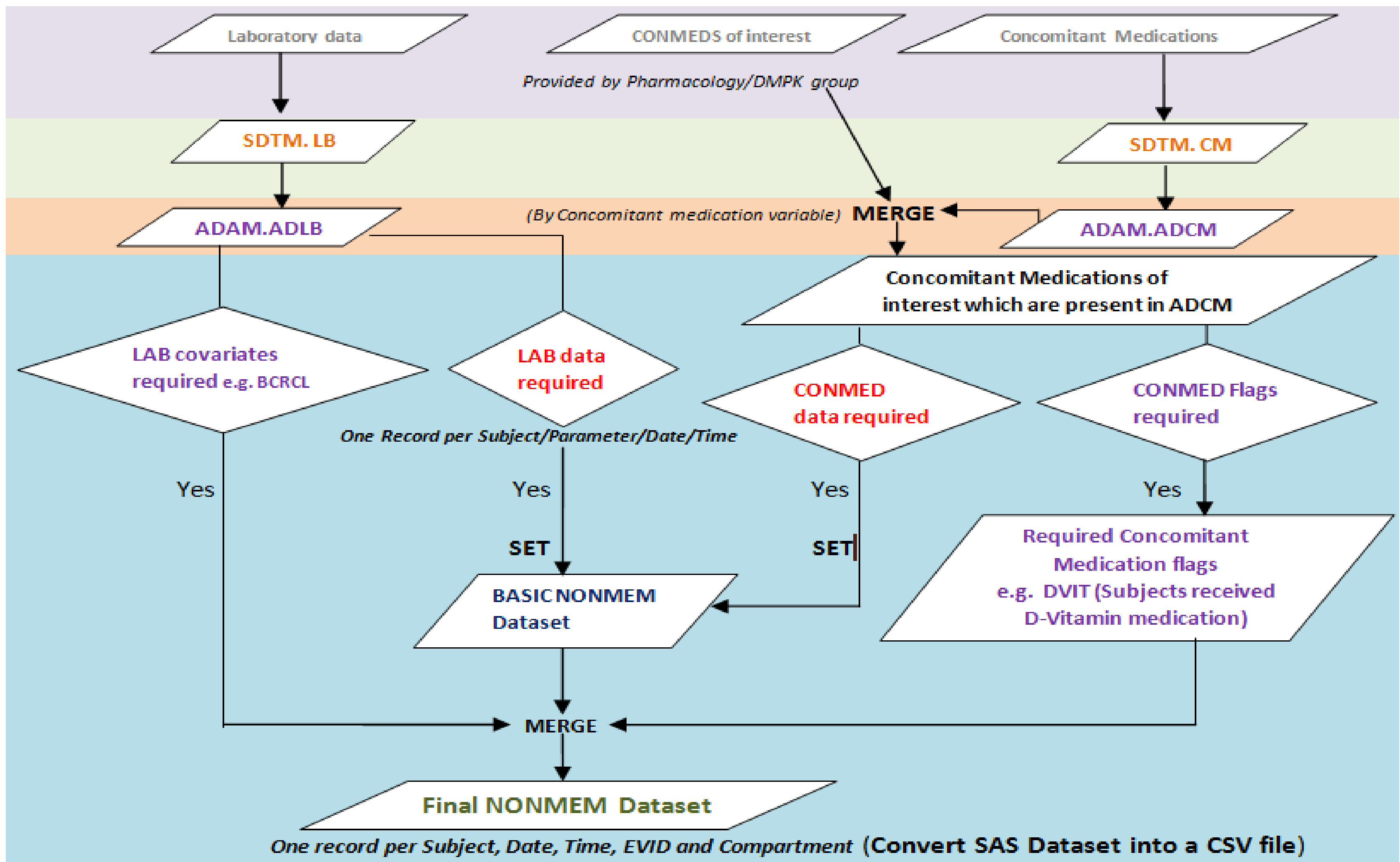
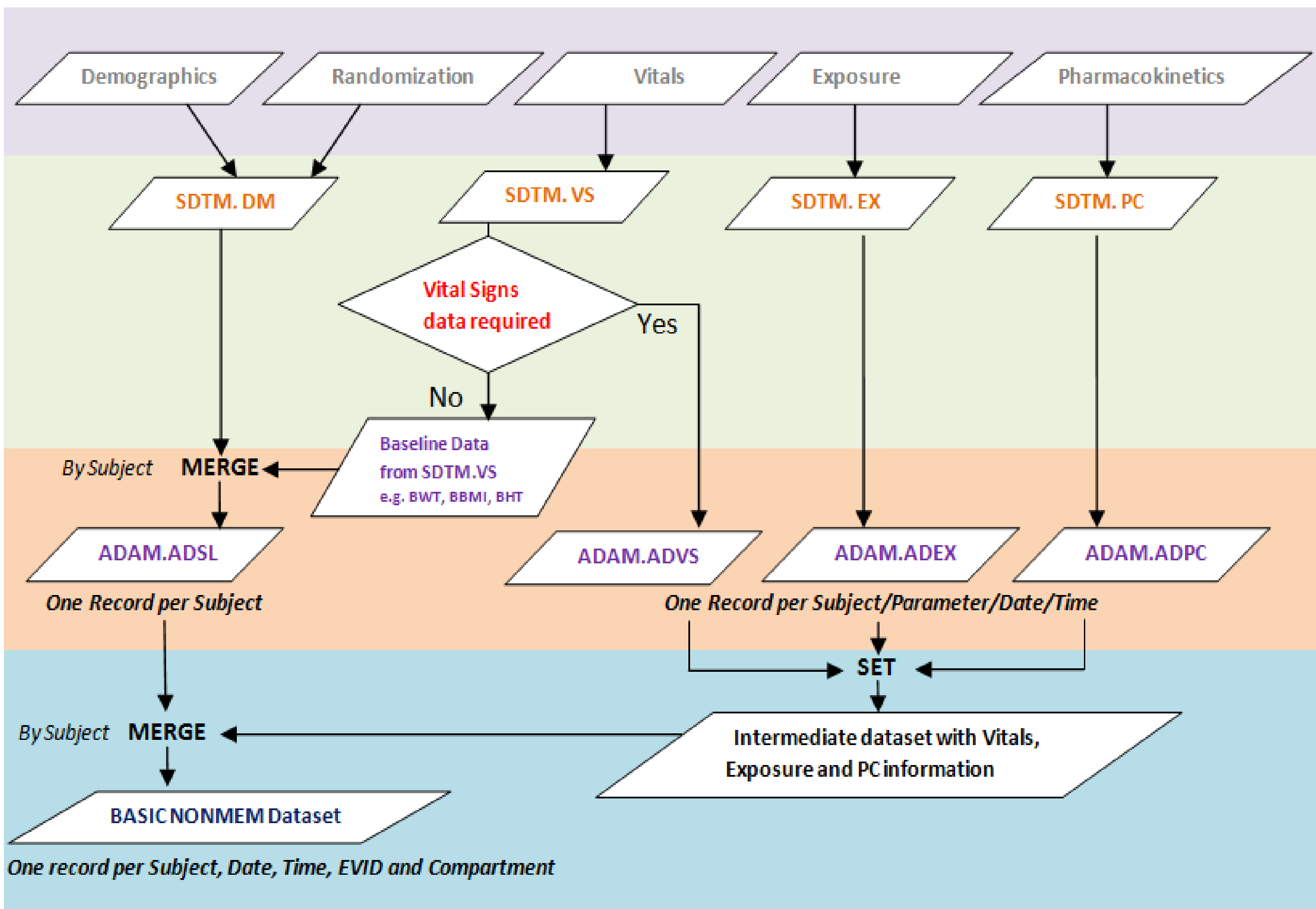
- ❖ NONMEM® - NON Linear Mixed Effect Modelling Software, a leading tool used to perform population PK/PD analysis.
- ❖ Includes variety of data components: Dosing records, PK and/or PD observations, Time independent and Dependent covariates, Lab covariates and CONMEDS.

This poster provides good understanding of a NONMEM input dataset structure and helps as a reference document in developing NONMEM input dataset .



NONMEM SOFTWARE INPUT (Pop PK/PD) DATASET DEVELOPMENT FLOWCHART

Dataset Structure: One record per Study, Subject, Date, Time, Event ID and Compartment



Overall there are five categories of variables in a NONMEM input Dataset : 1) Common and Required, 2) Common and Optional, 3) TA Specific and Required, 4) TA Specific and Optional, 5) Study Specific

NONMEM SOFTWARE INPUT (Pop PK/PD) DATASET EXAMPLE

Data Type	NMID	PTID	DATE	TIME	TAFD	STAFD	TALD	EVID	CMT	AMT	AMTU	DV	DVU	MDV	BQL	TRTP	TRTA	VISIT	AGE	SEX	RACE	BBMI	BBSA	BSBP	BDBP	DVIT	CONMED
CONMED	5	1001	2/11/2010	.	.	.	.	1	26	.	.	.	.	1	.	2	2		50	1	5	33.32	1.911	120	75	1	CALCITRIOL
LAB PD	5	1001	8/28/2013	8:00	-341.5	36552.5	-341.5	0	5	.	.	86.6	pmol/L	0	0	2	2	SCR	50	1	5	33.32	1.911	120	75	1	.
VITAL	5	1001	8/28/2013	8:00	-341.5	36552.5	-341.5	0	19	.	.	130	mmHg	0	0	2	2	SCR	50	1	5	33.32	1.911	120	75	1	.
PK	5	1001	9/11/2013	7:52	-5.6333	36888.36	-5.63	0	1	.	.	.	.	1	1	2	2	D1	50	1	5	33.32	1.911	120	75	1	.
LAB PD	5	1001	9/11/2013	7:57	-5.55	36888.45	-5.55	0	5	.	.	88.7	pmol/L	0	0	2	2	D1	50	1	5	33.32	1.911	120	75	1	.
VITAL	5	1001	9/11/2013	8:00	-5.5	36888.5	-5.5	0	20	.	.	75	mmHg	0	0	2	2	D1	50	1	5	33.32	1.911	120	75	1	.
DOSING	5	1001	9/11/2013	13:30	0	36894	0	1	0	5	MG	.	.	1	.	2	2	W 1	50	1	5	33.32	1.911	120	75	1	.
PK	5	1001	10/2/2013	7:40	498.16	37392.16	42.33	0	1	.	.	30.8	ng/mL	0	0	2	2	W 4	50	1	5	33.32	1.915	120	75	1	.
LAB PD	5	1001	10/2/2013	7:40	498.16	37392.16	42.33	0	5	.	.	72.4	pmol/L	0	0	2	2	W 4	50	1	5	33.32	1.915	120	75	1	.
VITAL	5	1001	10/2/2013	8:00	498.5	37392.5	42.66	0	19	.	.	109	mmHg	0	0	2	2	W 4	50	1	5	33.32	1.915	120	75	1	.
DOSING	5	1001	10/2/2013	13:10	503.66	37397.66	0	1	0	5	MG	.	.	1	.	2	2	W 4	50	1	5	33.32	1.915	120	75	1	.

NONMEM DATASET EXCLUSIONS : All dose missing records, records with derived variables and duplicate records all key variables are excluded at preprocessing level.

CONCLUSION : We should not just follow a set of rules and dataset specifications. Need to understand the dataset development work flow and gain required knowledge on the structure and requirements of a NONMEM input dataset.

REFERENCES : 1) Dennis Fisher, Steven Shafer. Basic Concepts- Pharmacokinetic and Pharmacodynamic Analysis with NONMEM
2) NONMEM User Guide by Alison J. Boeckmann, Lewis B. Sheiner, Stuart L. Beal
3) http://shaficonsultancy.com/papers/Producing_NONMEM_Datasets_Poster.pdf

AKNOWLEDGEMENTS : I would like to thank all Cytel colleagues who provided their valuable input for this paper.
I would like to acknowledge Shafi Chowdhury, et al., poster on “Producing NONMEM dataset using a standard SAS® program” presented at PAGE meeting which helped me as a reference material.