

Supplementary Figure 1 All of the Timelines of the work pattern of the robotic nurse team

Surgery 1

07:40

08:52

10:04

11:16

12:28

13:40

Patient at the OR room

Patient under anesthesia

Scrub Nurse

Circulating Nurse

Supervised Circulating Nurse

Nurses released for a break

Nurse leaves OR room

Starting the robotic system

Unpacking of equipment

Draping of the robotic arms

Positioning of the patient

Preparation of the surgical field

Port Placement

Docking

Console Time

Undocking

Skin Closure

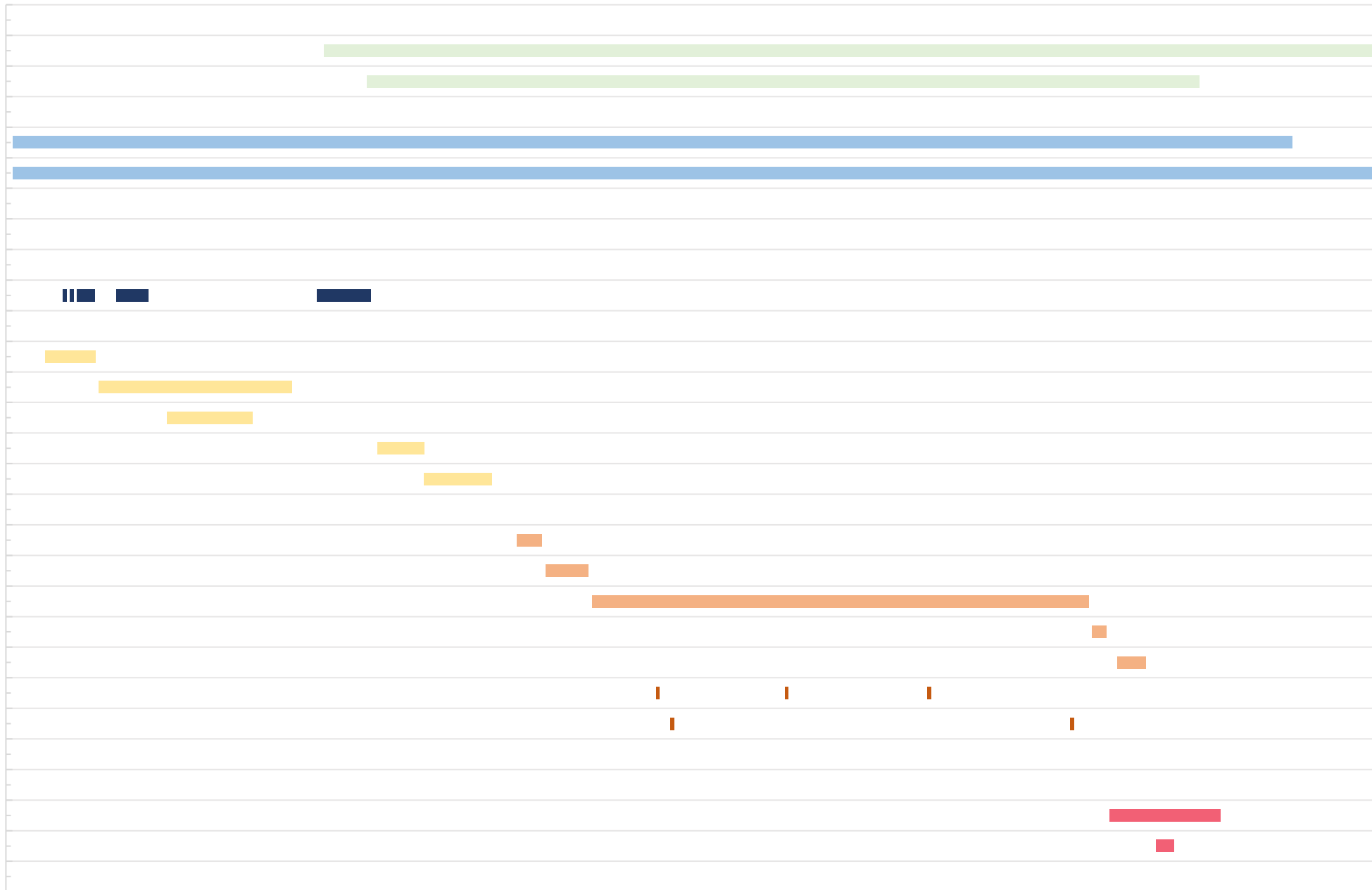
Change of instruments

Rinse of camera lens

Technical Errors

Equipment clean up

Preparing the patient for awakening



Surgery 2

07:40

08:52

10:04

11:16

12:28

Patient at the OR room
Patient under anesthesia

Scrub Nurse

Circulating Nurse

Supervised Circulating Nurse

Nurses released for a break

Nurse leaves OR room

Starting the robotic system

Unpacking of equipment

Draping of the robotic arms

Positioning of the patient

Preparation of the surgical field

Port Placement

Docking

Console Time

Undocking

Skin Closure

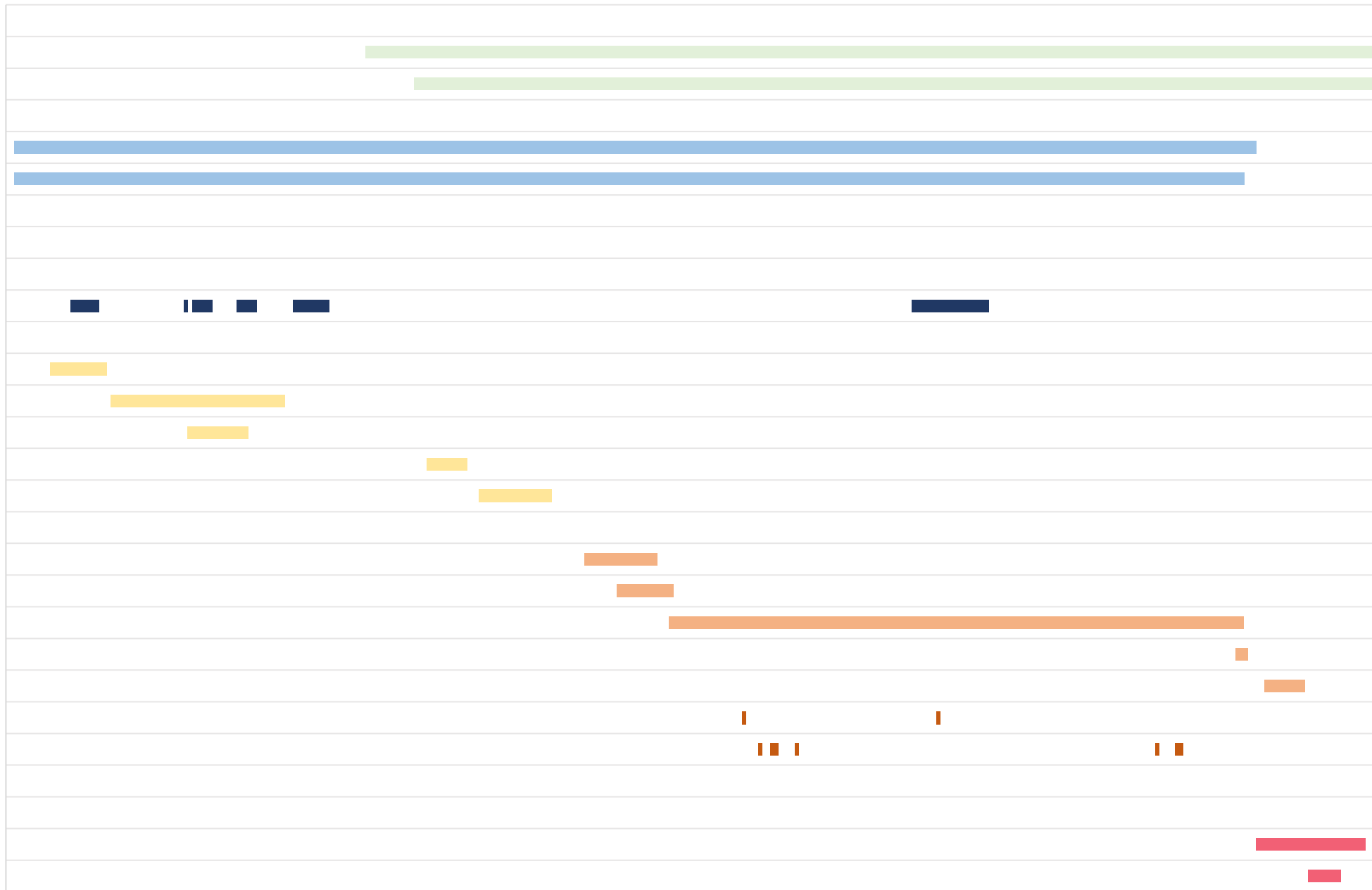
Change of instruments

Rinse of camera lens

Technical Errors

Equipment clean up

Preparing the patient for awakening



Surgery 3

07:40

08:52

10:04

11:16

12:28

13:40

Patient at the OR room

Patient under anesthesia

Scrub Nurse

Circulating Nurse

Supervised Circulating Nurse

Nurses released for a break

Nurse leaves OR room

Starting the robotic system

Unpacking of equipment

Draping of the robotic arms

Positioning of the patient

Preparation of the surgical field

Port Placement

Docking

Console Time

Undocking

Skin Closure

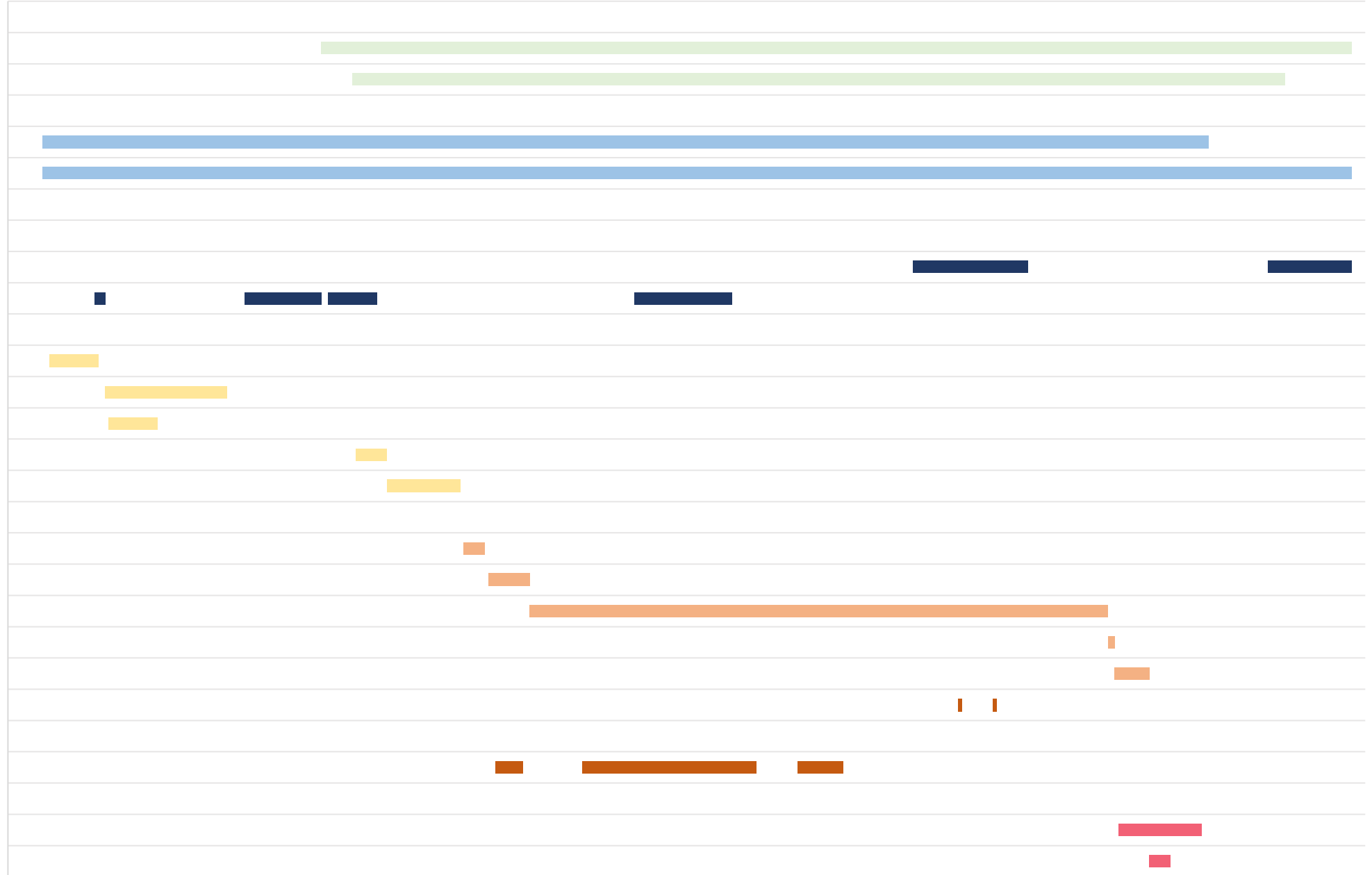
Change of instruments

Rinse of camera lens

Technical Errors

Equipment clean up

Preparing the patient for awakening



Surgery 4

07:40

08:52

10:04

11:16

12:28

Patient at the OR room

Patient under anesthesia

Scrub Nurse

Circulating Nurse

Supervised Circulating Nurse

Nurses released for a break

Nurse leaves OR room

Starting the robotic system

Unpacking of equipment

Draping of the robotic arms

Positioning of the patient

Preparation of the surgical field

Port Placement

Docking

Console Time

Undocking

Skin Closure

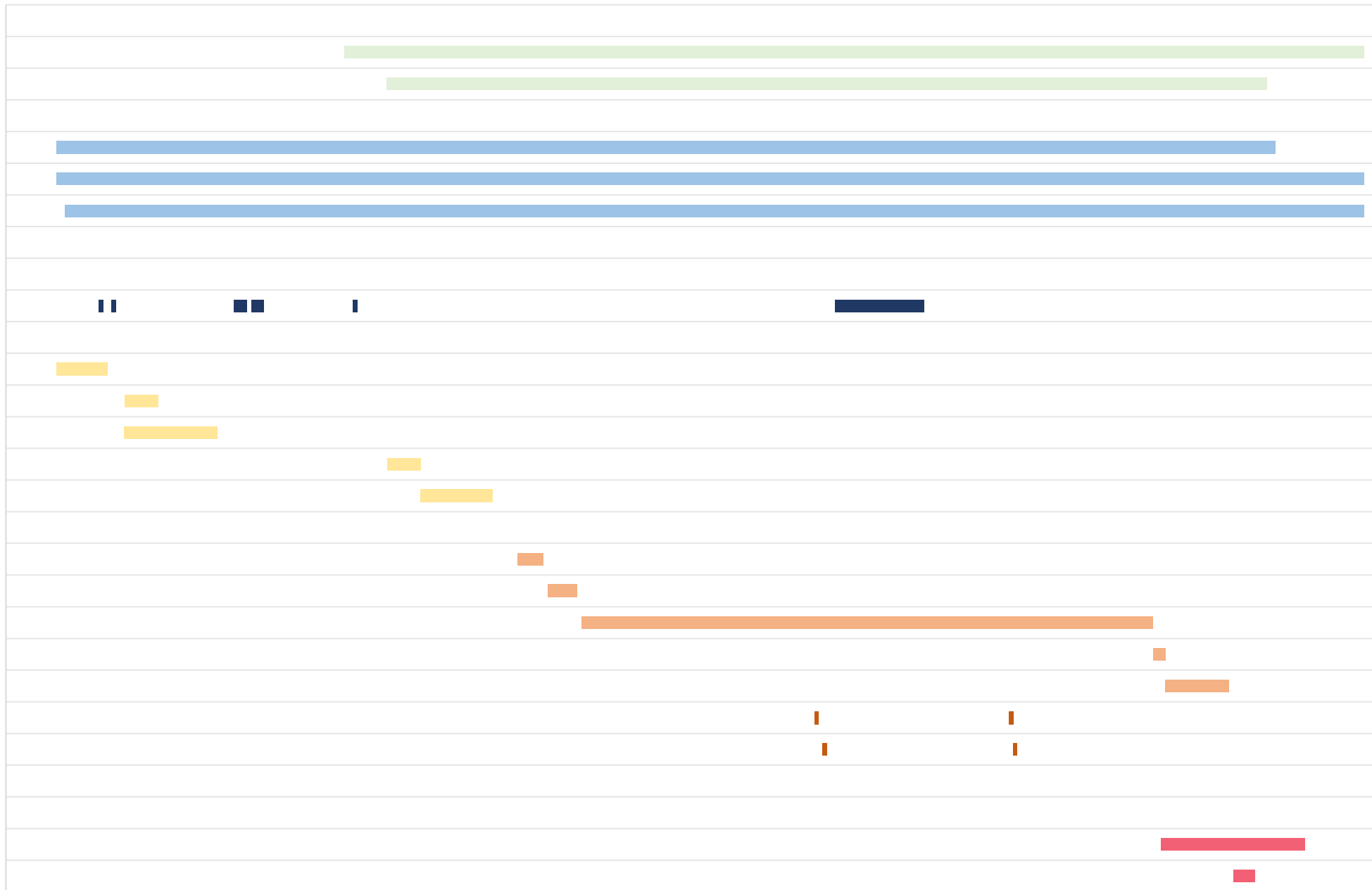
Change of instruments

Rinse of camera lens

Technical Errors

Equipment clean up

Preparing the patient for awakening



Surgery 5

07:40

08:52

10:04

11:16

12:28

13:40

Patient at the OR room
Patient under anesthesia

Scrub Nurse
Circulating Nurse
Supervised Circulating Nurse

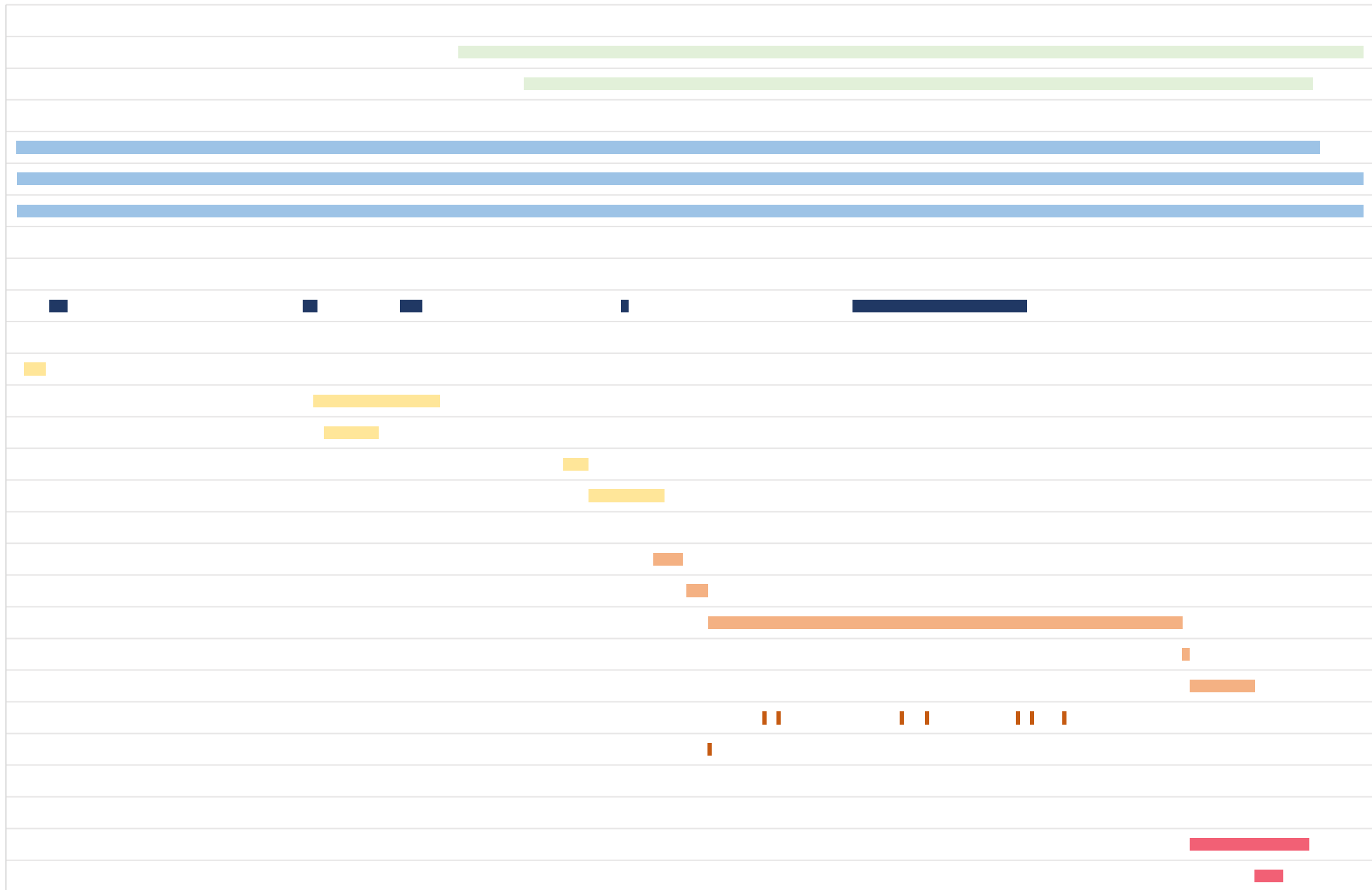
Nurses released for a break
Nurse leaves OR room

Starting the robotic system
Unpacking of equipment
Draping of the robotic arms
Positioning of the patient
Preparation of the surgical field

Port Placement
Docking
Console Time
Undocking
Skin Closure

Change of instruments
Rinse of camera lens
Technical Errors

Equipment clean up
Preparing the patient for awakening



Surgery 6

07:40

08:52

10:04

11:16

12:28

Patient at the OR room

Patient under anesthesia

Scrub Nurse

Circulating Nurse

Supervised Circulating Nurse

Nurses released for a break

Nurse leaves OR room

Starting the robotic system

Unpacking of equipment

Draping of the robotic arms

Positioning of the patient

Preparation of the surgical field

Port Placement

Docking

Console Time

Undocking

Skin Closure

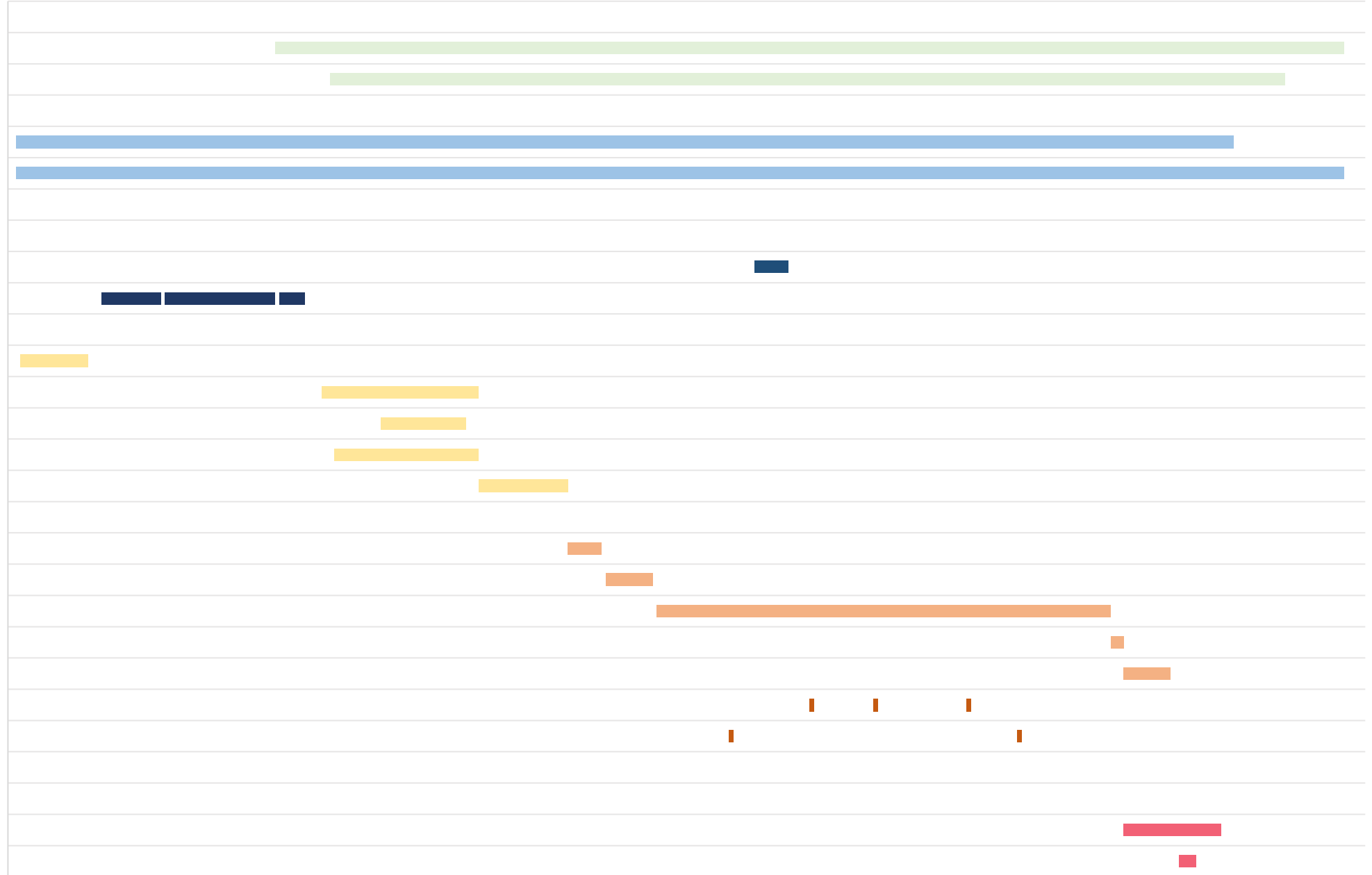
Change of instruments

Rinse of camera lens

Technical Errors

Equipment clean up

Preparing the patient for awakening



Surgery 7

07:40

08:52

10:04

11:16

12:28

Patient at the OR room

Patient under anesthesia

Scrub Nurse

Circulating Nurse

Supervised Circulating Nurse

Nurses released for a break

Nurse leaves OR room

Starting the robotic system

Unpacking of equipment

Draping of the robotic arms

Positioning of the patient

Preparation of the surgical field

Port Placement

Docking

Console Time

Undocking

Skin Closure

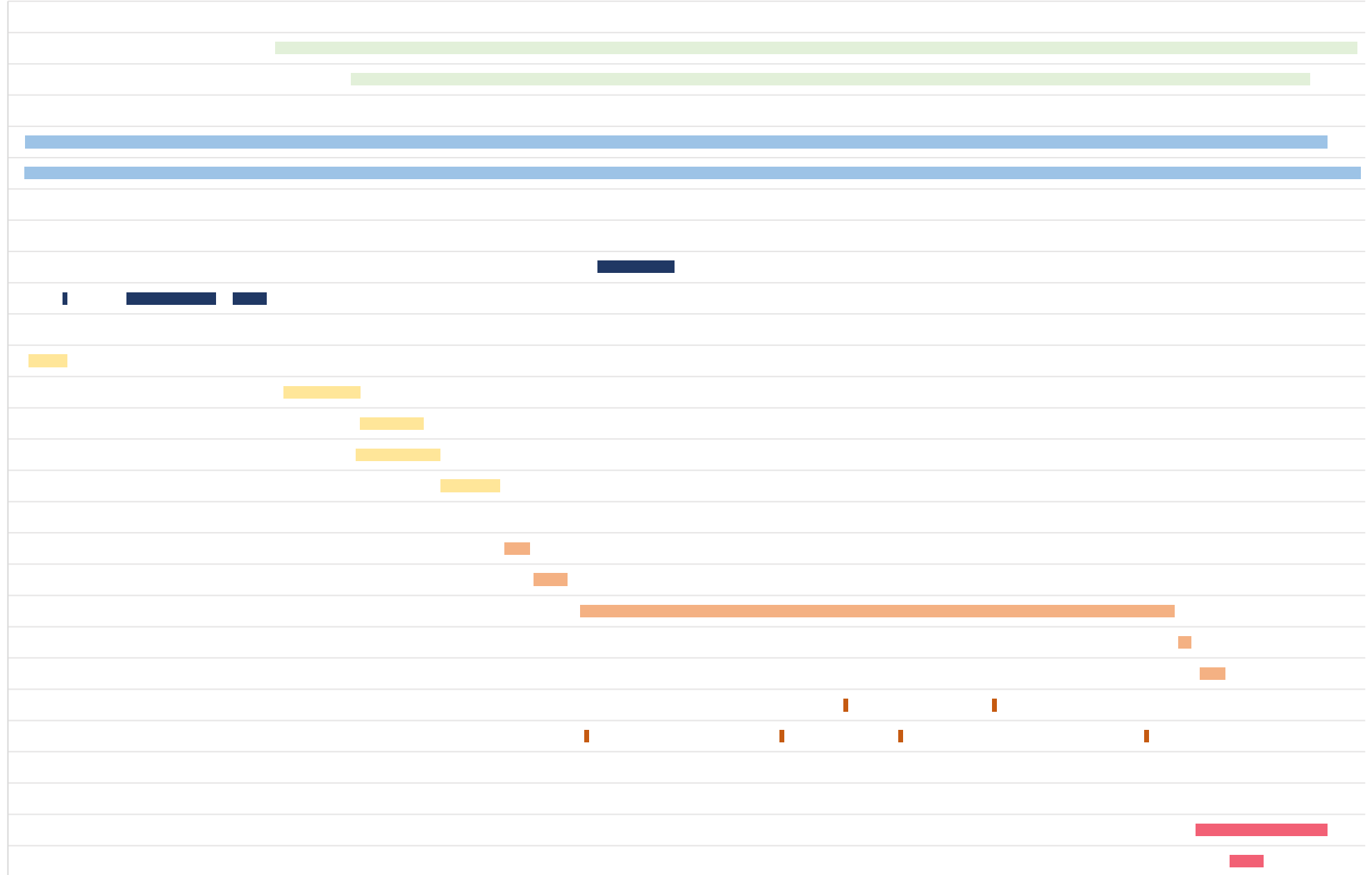
Change of instruments

Rinse of camera lens

Technical Errors

Equipment clean up

Preparing the patient for awakening



Surgery 8

07:40

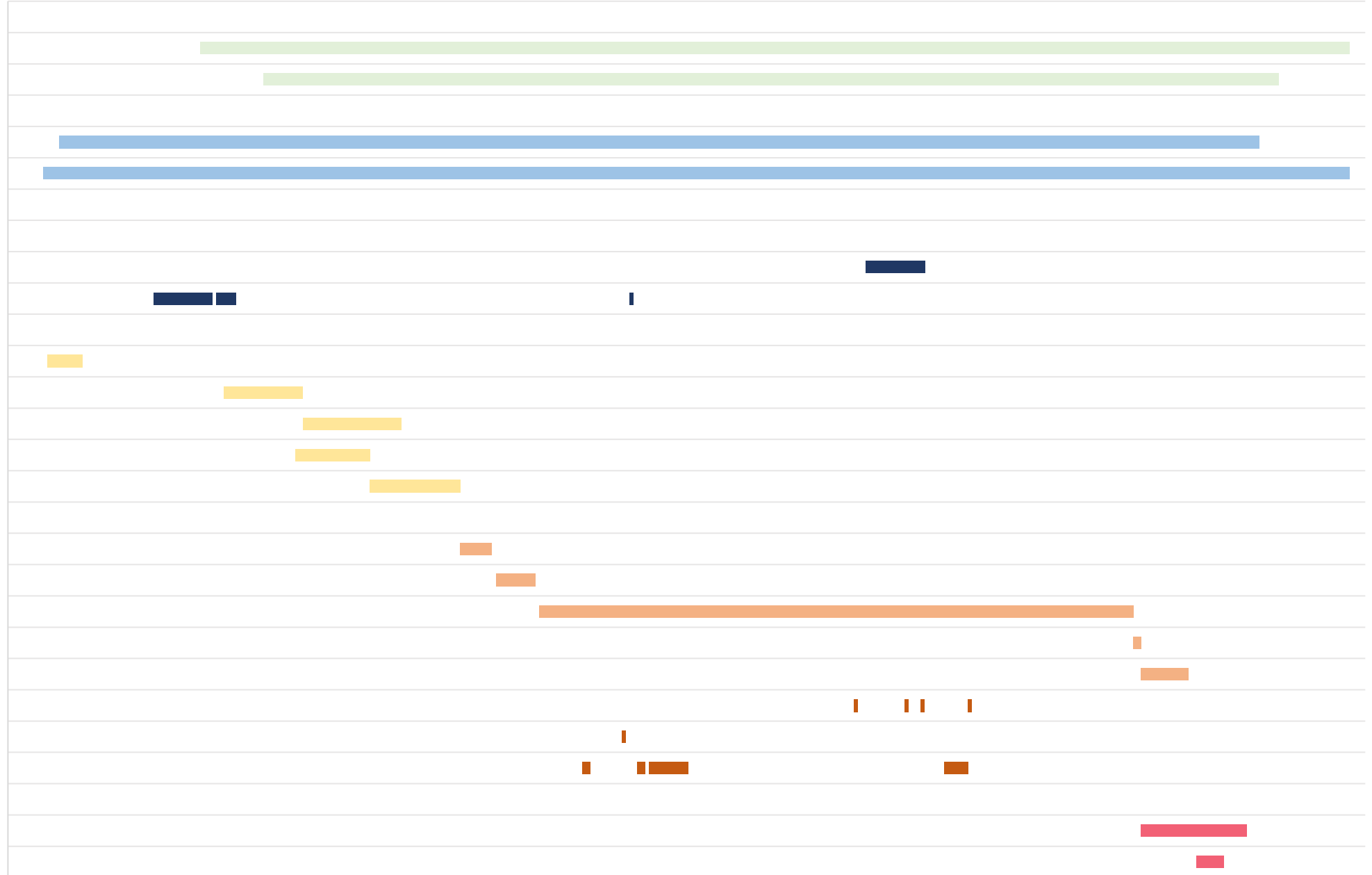
08:52

10:04

11:16

12:28

- Patient at the OR room
- Patient under anesthesia
- Scrub Nurse
- Circulating Nurse
- Supervised Circulating Nurse
- Nurses released for a break
- Nurse leaves OR room
- Starting the robotic system
- Unpacking of equipment
- Draping of the robotic arms
- Positioning of the patient
- Preparation of the surgical field
- Port Placement
- Docking
- Console Time
- Undocking
- Skin Closure
- Change of instruments
- Rinse of camera lens
- Technical Errors
- Equipment clean up
- Preparing the patient for awakening



Surgery 9

07:40

08:52

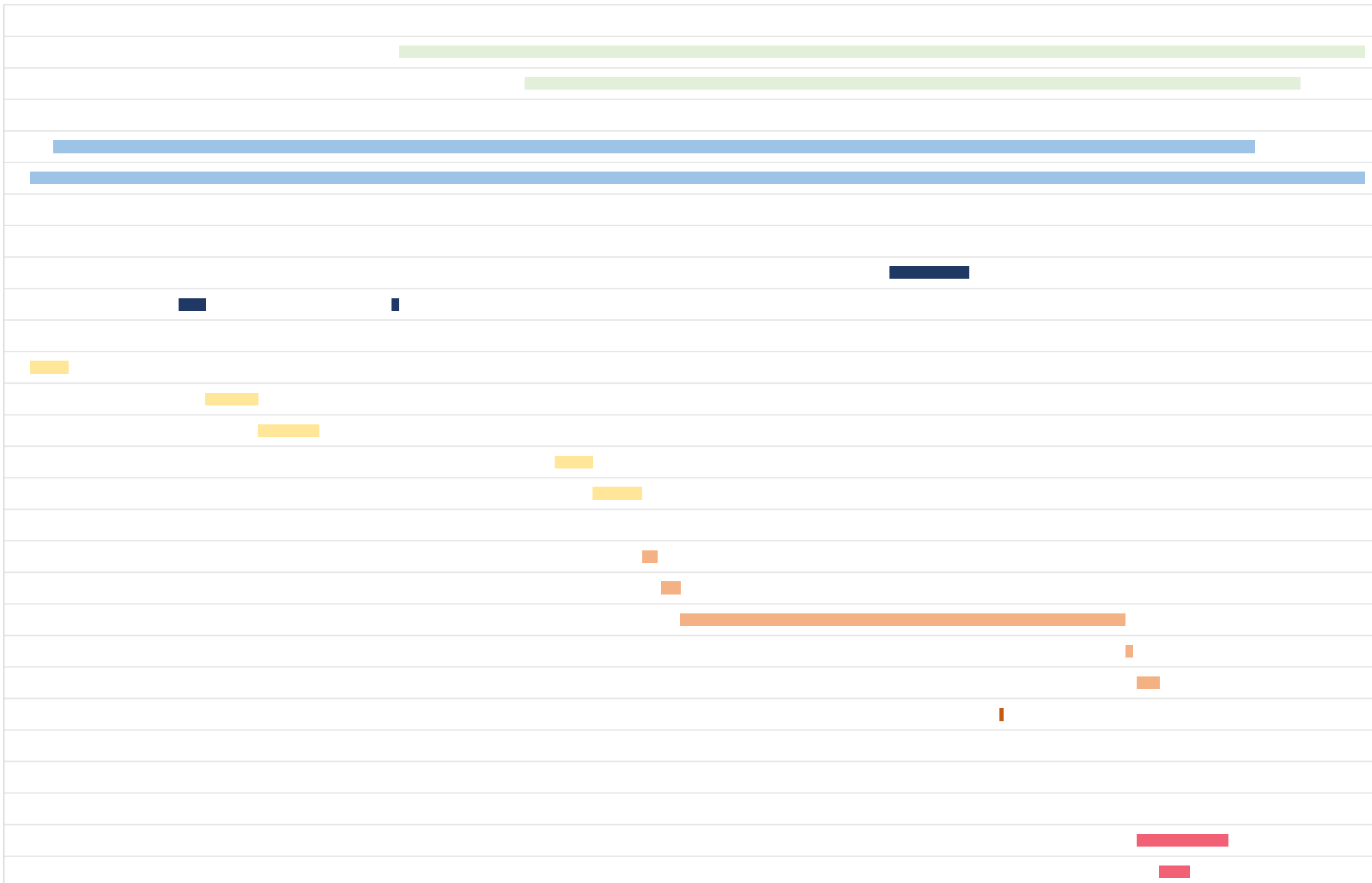
10:04

11:16

12:28

13:40

- Patient at the OR room
- Patient under anesthesia
- Scrub Nurse
- Circulating Nurse
- Supervised Circulating Nurse
- Nurses released for a break
- Nurse leaves OR room
- Starting the robotic system
- Unpacking of equipment
- Draping of the robotic arms
- Positioning of the patient
- Preparation of the surgical field
- Port Placement
- Docking
- Console Time
- Undocking
- Skin Closure
- Change of instruments
- Rinse of camera lens
- Technical Errors
- Equipment clean up
- Preparing the patient for awakening



Surgery 10

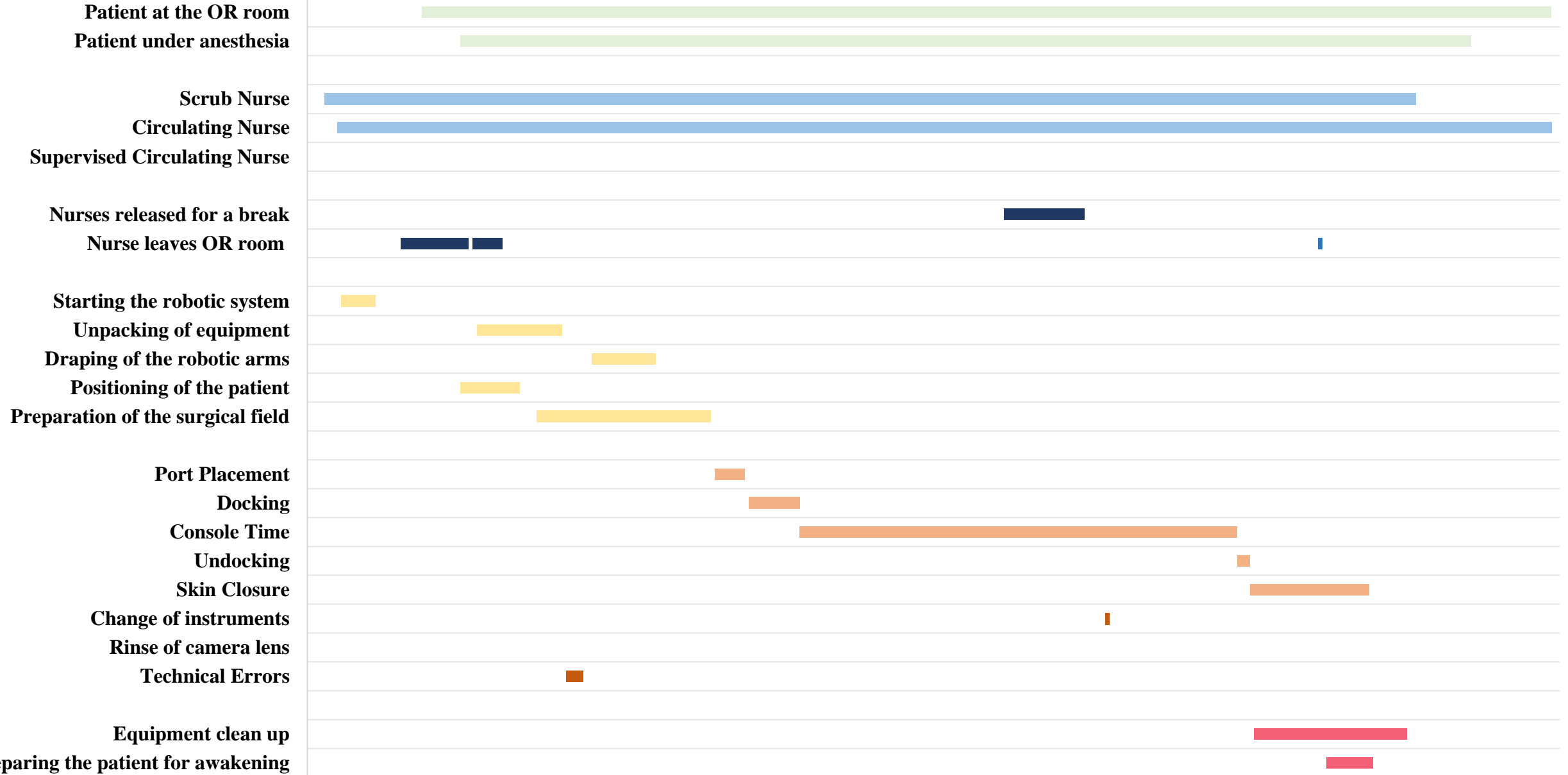
07:40

08:52

10:04

11:16

12:28



Surgery 11

07:42

08:54

10:06

11:18

12:30

13:42

Patient at the OR room

Patient under anesthesia

Scrub Nurse

Circulating Nurse

Supervised Circulating Nurse

Nurses released for a break

Nurse leaves OR room

Starting the robotic system

Unpacking of equipment

Draping of the robotic arms

Positioning of the patient

Preparation of the surgical field

Port Placement

Docking

Console Time

Undocking

Skin Closure

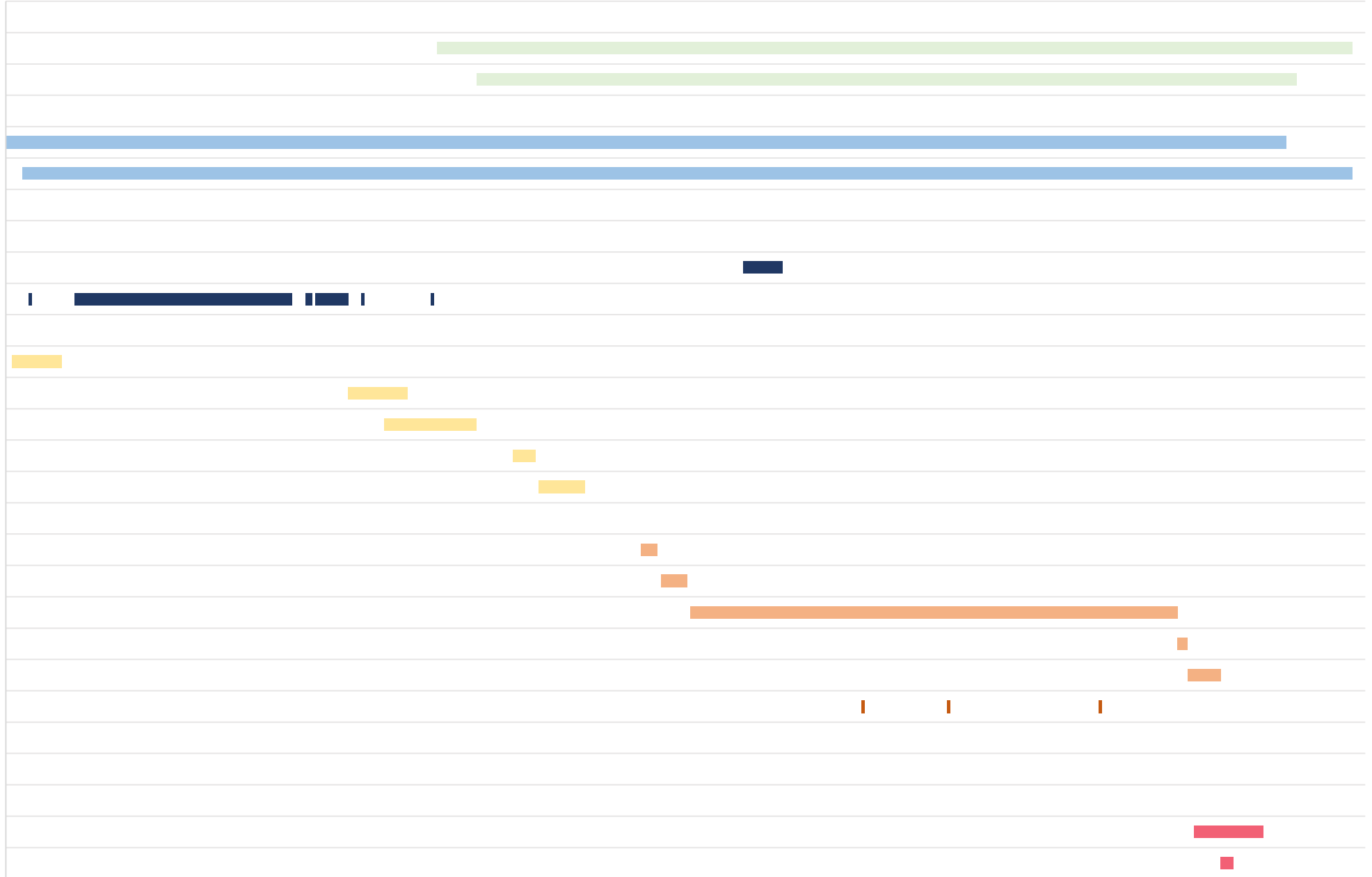
Change of instruments

Rinse of camera lens

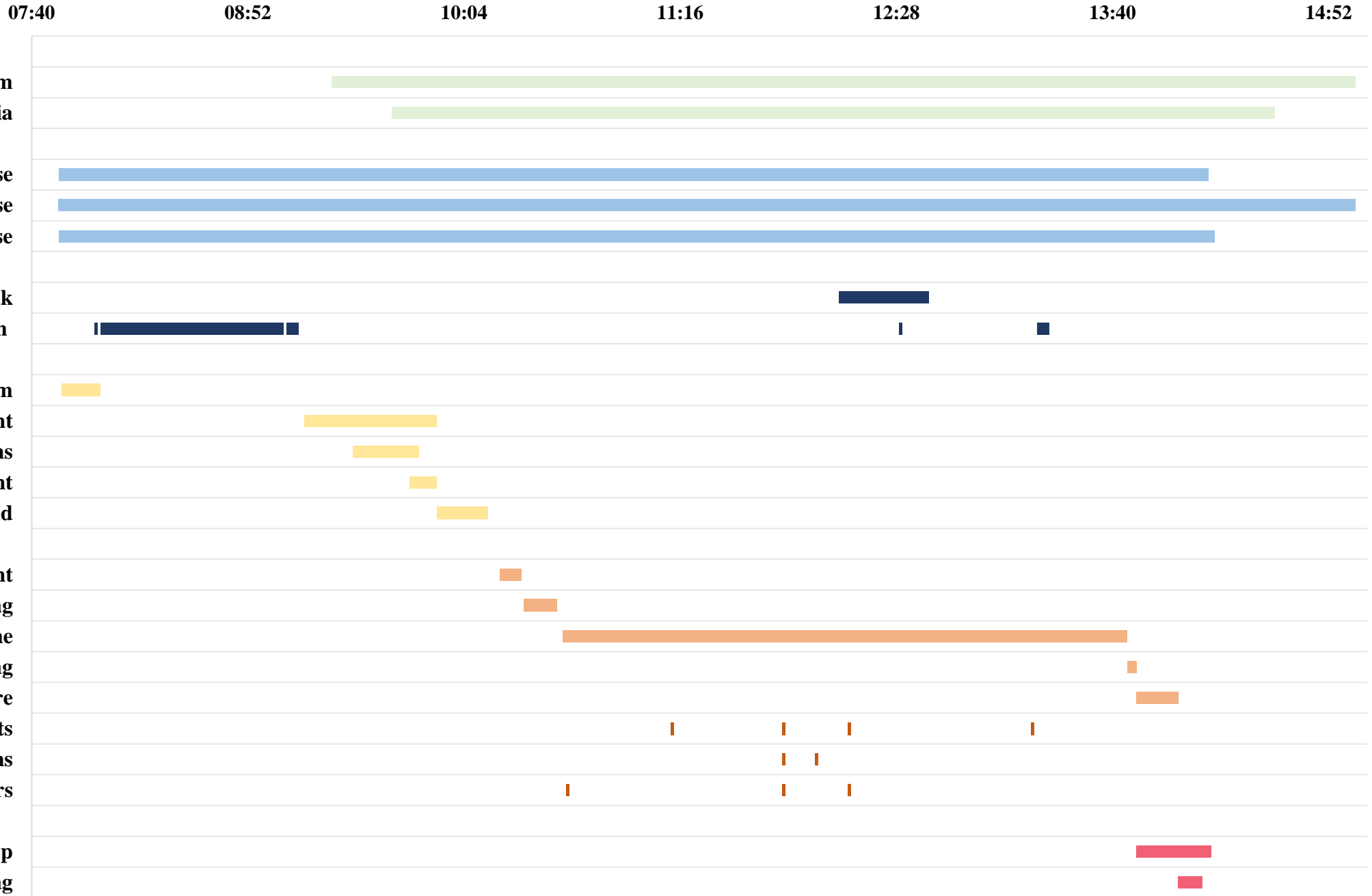
Technical Errors

Equipment clean up

Preparing the patient for awakening



Surgery 12



Surgery 13

07:40

08:52

10:04

11:16

12:28

13:40

Patient at the OR room

Patient under anesthesia

Scrub Nurse

Circulating Nurse

Supervised Circulating Nurse

Nurses released for a break

Nurse leaves OR room

Starting the robotic system

Unpacking of equipment

Draping of the robotic arms

Positioning of the patient

Preparation of the surgical field

Port Placement

Docking

Console Time

Undocking

Skin Closure

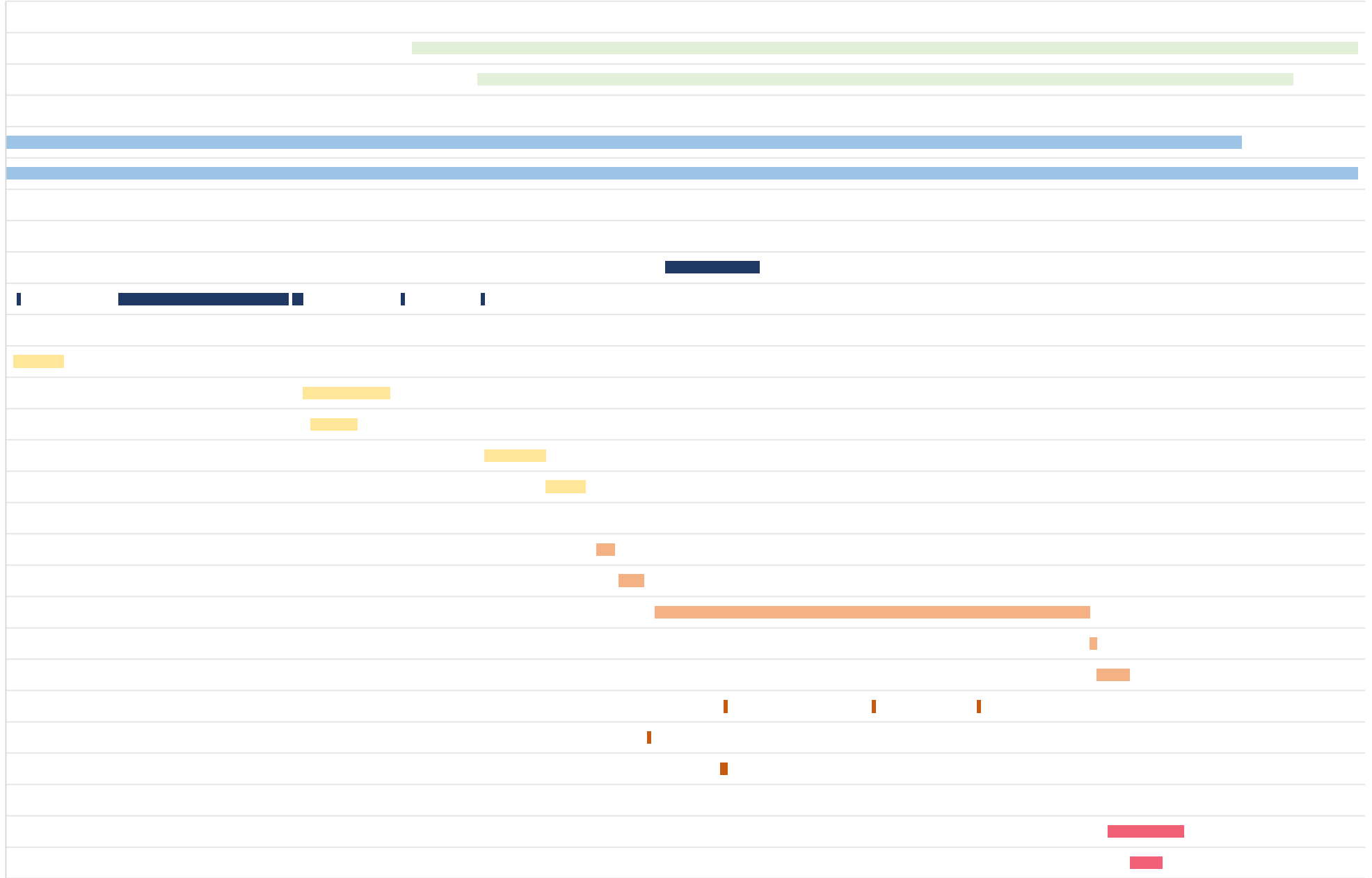
Change of instruments

Rinse of camera lens

Technical Errors

Equipment clean up

Preparing the patient for awakening



Surgery 14

07:40

08:52

10:04

11:16

12:28

Patient at the OR room

Patient under anesthesia

Scrub Nurse

Circulating Nurse

Supervised Circulating Nurse

Nurses released for a break

Nurse leaves OR room

Starting the robotic system

Unpacking of equipment

Draping of the robotic arms

Positioning of the patient

Preparation of the surgical field

Port Placement

Docking

Console Time

Undocking

Skin Closure

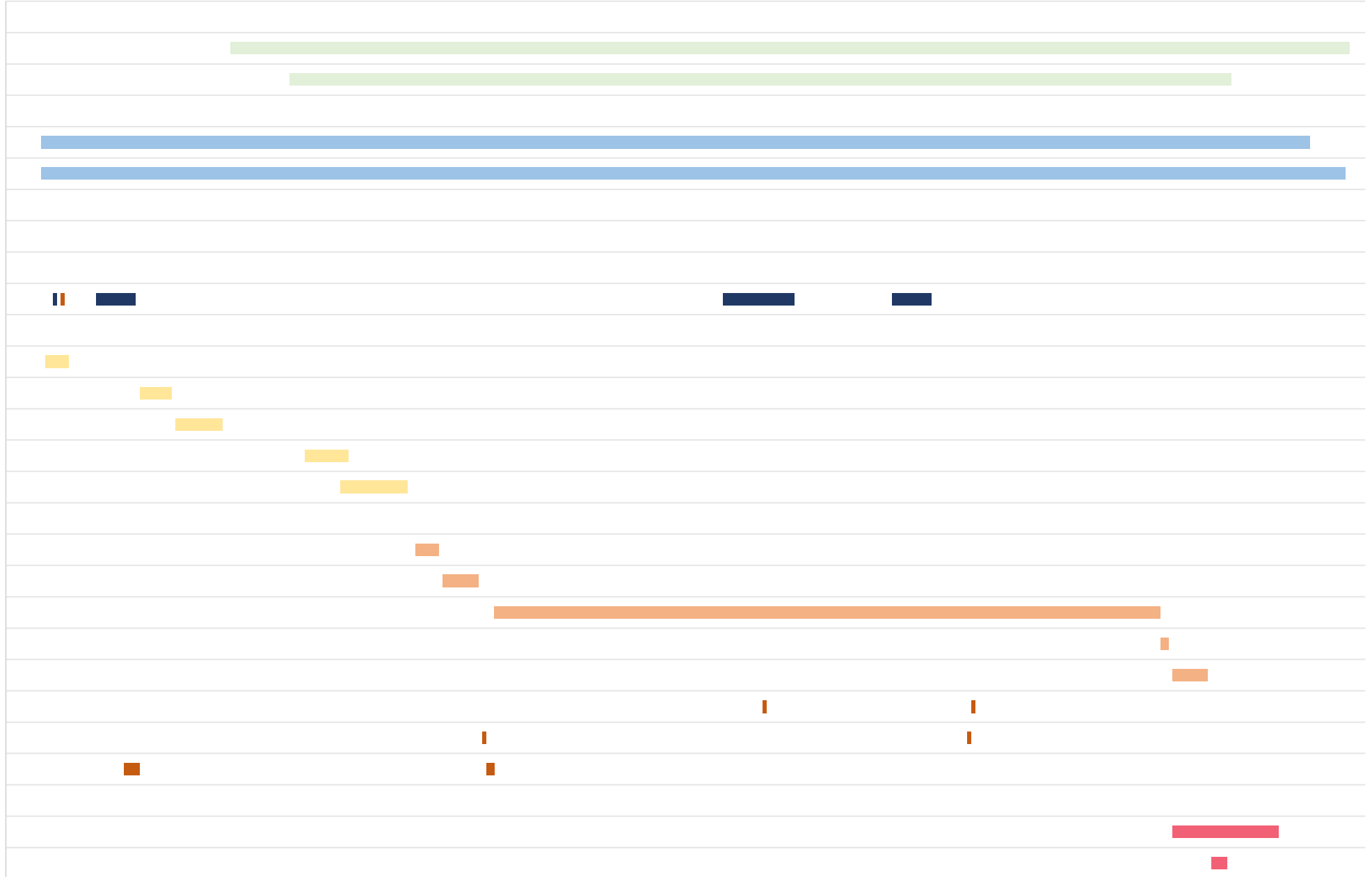
Change of instruments

Rinse of camera lens

Technical Errors

Equipment clean up

Preparing the patient for awakening



Surgery 15

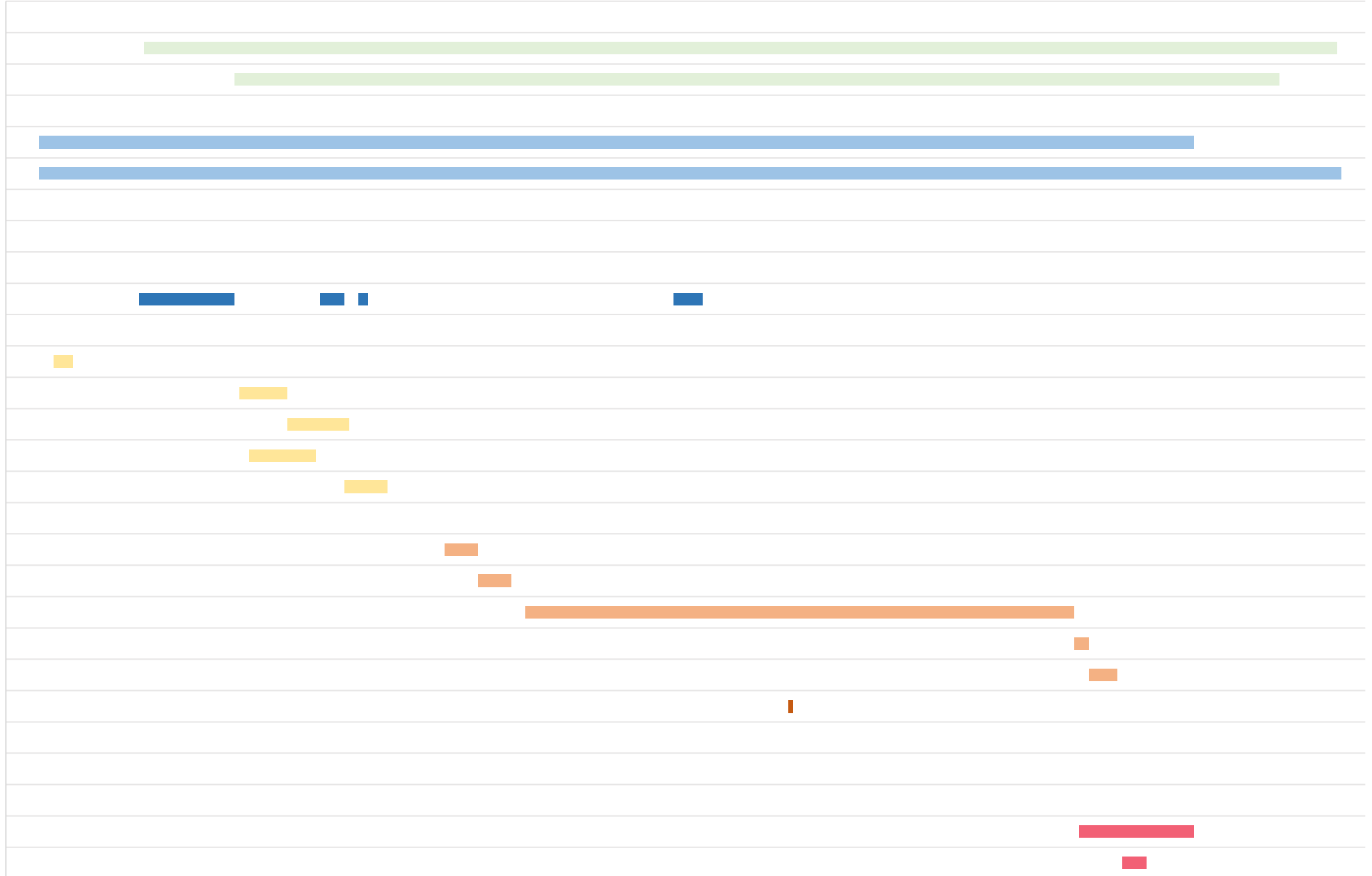
07:40

08:52

10:04

11:16

- Patient at the OR room
- Patient under anesthesia
- Scrub Nurse
- Circulating Nurse
- Supervised Circulating Nurse
- Nurses released for a break
- Nurse leaves OR room
- Starting the robotic system
- Unpacking of equipment
- Draping of the robotic arms
- Positioning of the patient
- Preparation of the surgical field
- Port Placement
- Docking
- Console Time
- Undocking
- Skin Closure
- Change of instruments
- Rinse of camera lens
- Technical Errors
- Equipment clean up
- Preparing the patient for awakening



Surgery 16

07:40

08:52

10:04

11:16

12:28

Patient at the OR room

Patient under anesthesia

Scrub Nurse

Circulating Nurse

Supervised Circulating Nurse

Nurses released for a break

Nurse leaves OR room

Starting the robotic system

Unpacking of equipment

Draping of the robotic arms

Positioning of the patient

Preparation of the surgical field

Port Placement

Docking

Console Time

Undocking

Skin Closure

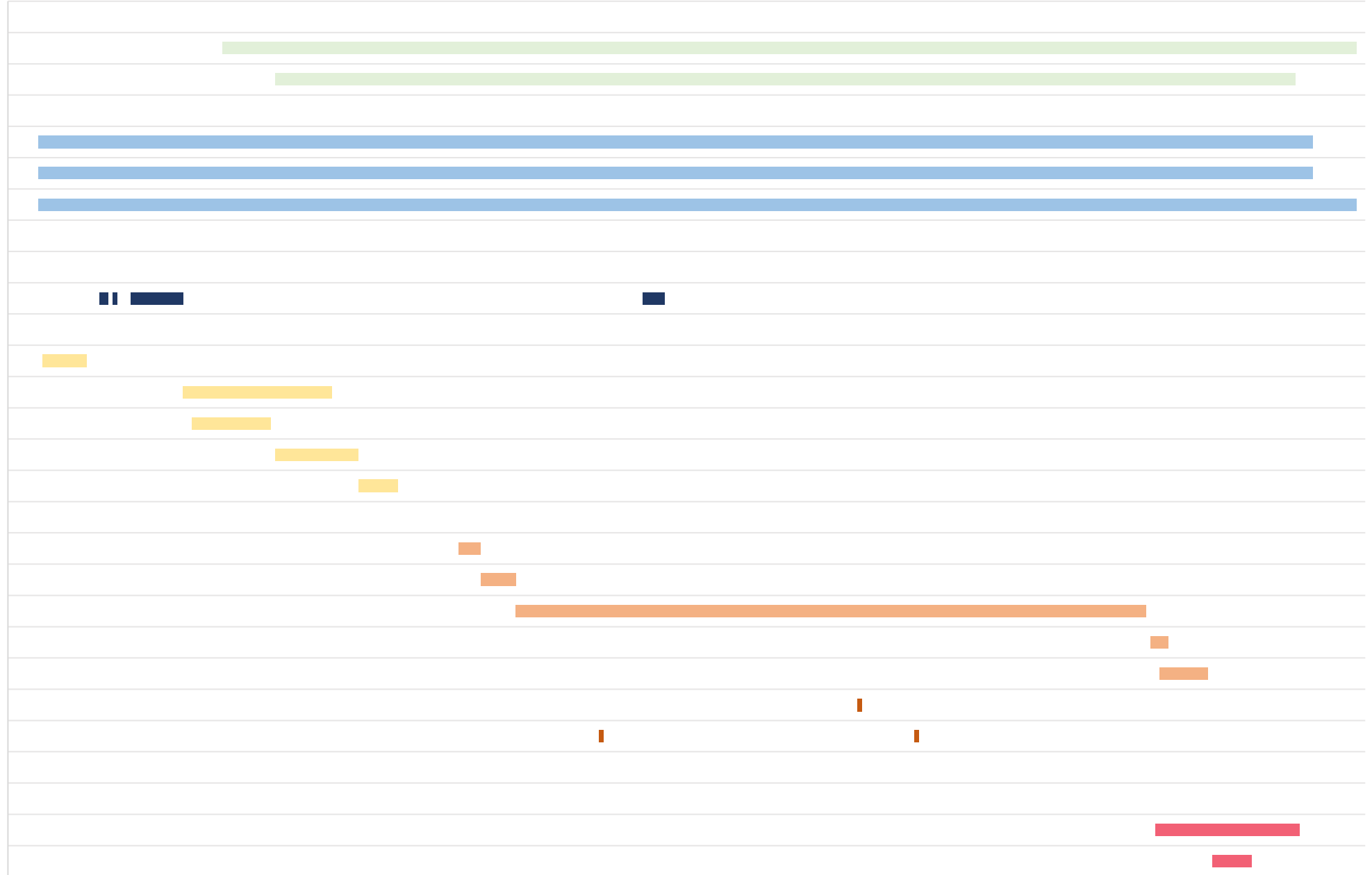
Change of instruments

Rinse of camera lens

Technical Errors

Equipment clean up

Preparing the patient for awakening



Surgery 17

07:35

08:47

09:59

11:11

12:23

13:35

Patient at the OR room

Patient under anesthesia

Scrub Nurse

Circulating Nurse

Supervised Circulating Nurse

Nurses released for a break

Nurse leaves OR room

Starting the robotic system

Unpacking of equipment

Draping of the robotic arms

Positioning of the patient

Preparation of the surgical field

Port Placement

Docking

Console Time

Undocking

Skin Closure

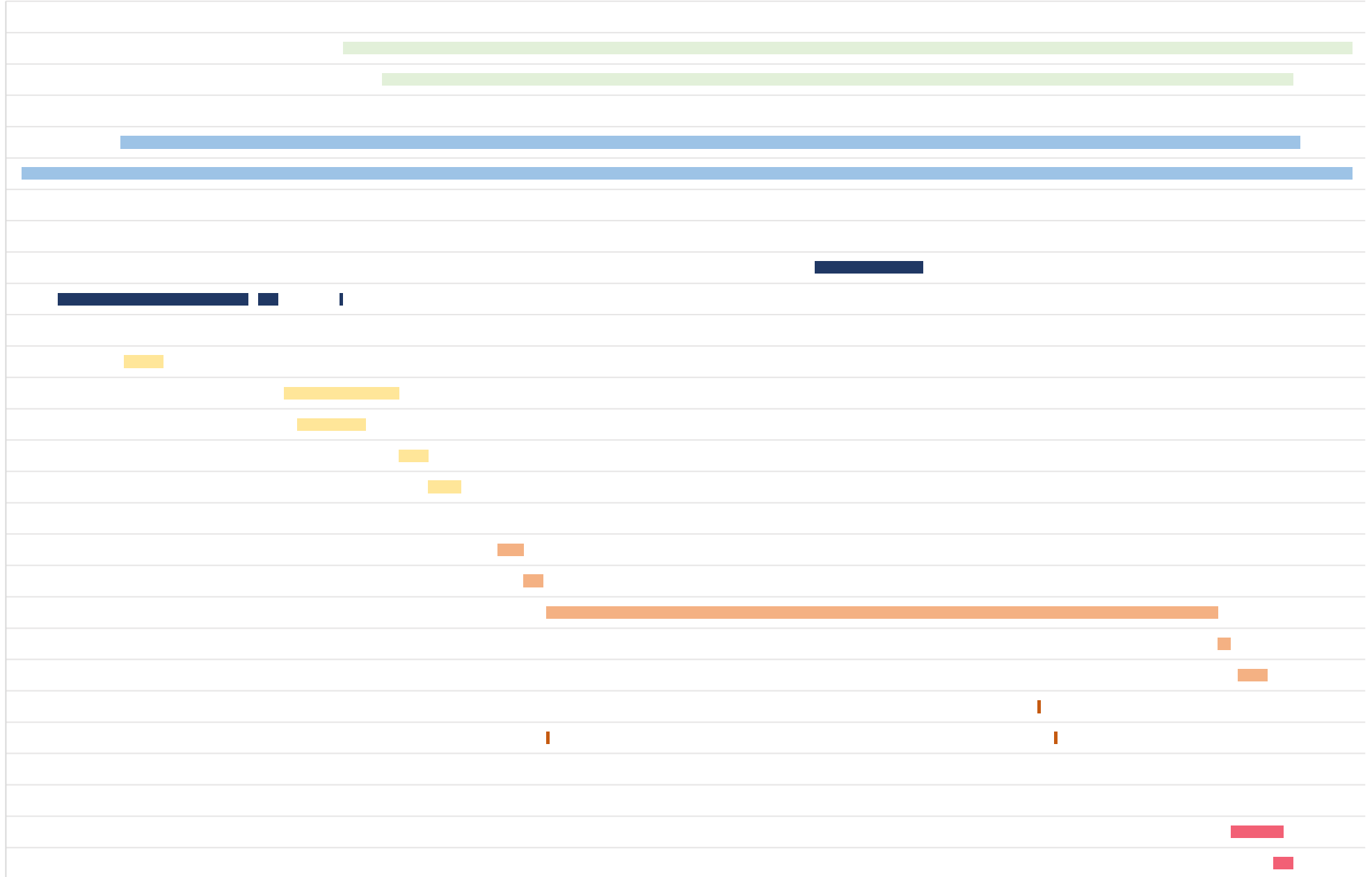
Change of instruments

Rinse of camera lens

Technical Errors

Equipment clean up

Preparing the patient for awakening



Surgery 18

07:40

08:52

10:04

11:16

12:28

13:40

Patient at the OR room

Patient under anesthesia

Scrub Nurse

Circulating Nurse

Supervised Circulating Nurse

Nurses released for a break

Nurse leaves OR room

Starting the robotic system

Unpacking of equipment

Draping of the robotic arms

Positioning of the patient

Preparation of the surgical field

Port Placement

Docking

Console Time

Undocking

Skin Closure

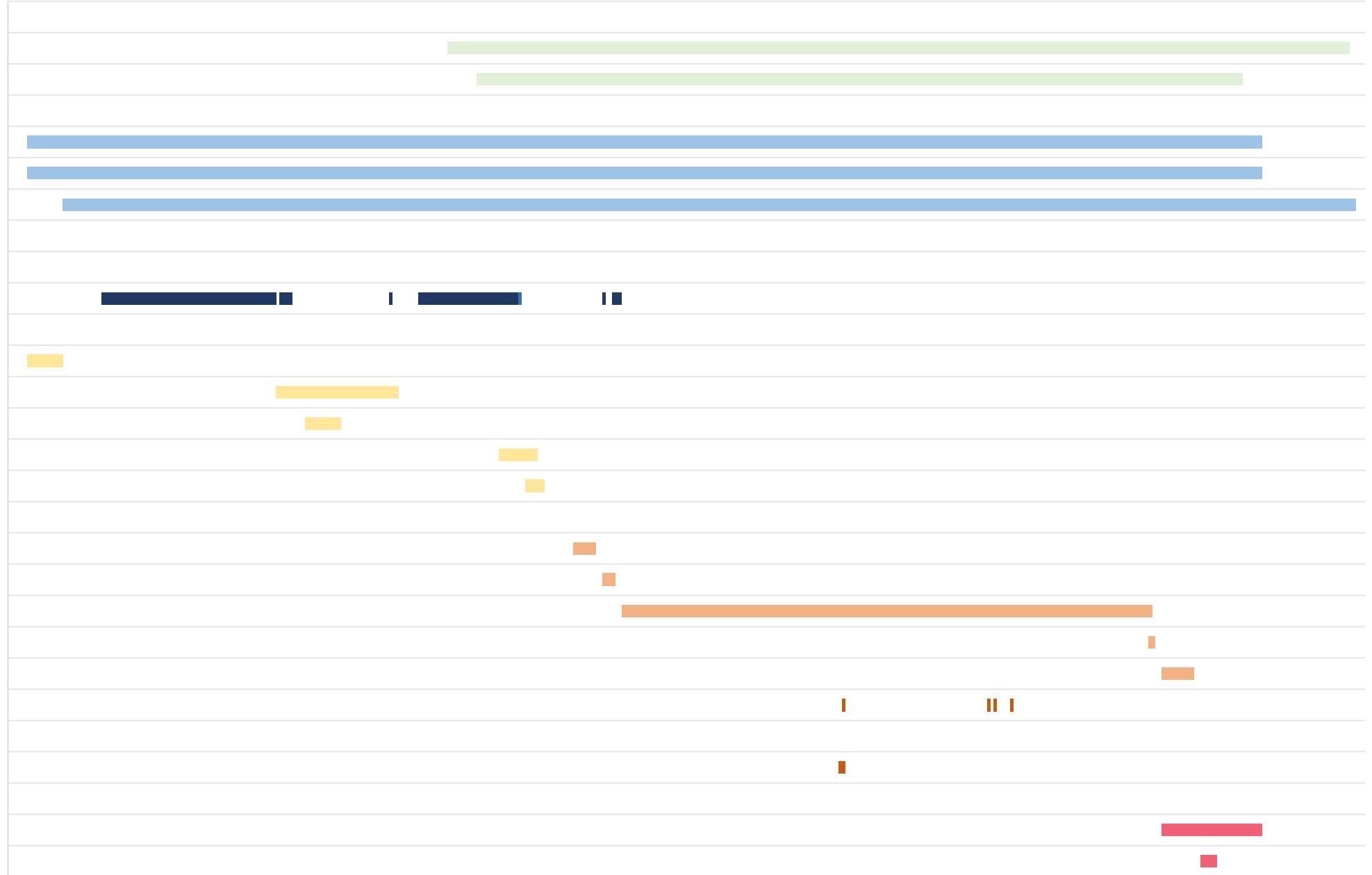
Change of instruments

Rinse of camera lens

Technical Errors

Equipment clean up

Preparing the patient for awakening



Surgery 19

07:40

08:52

10:04

11:16

12:28

13:40

Patient at the OR room

Patient under anesthesia

Scrub Nurse

Circulating Nurse

Supervised Circulating Nurse

Nurses released for a break

Nurse leaves OR room

Starting the robotic system

Unpacking of equipment

Draping of the robotic arms

Positioning of the patient

Preparation of the surgical field

Port Placement

Docking

Console Time

Undocking

Skin Closure

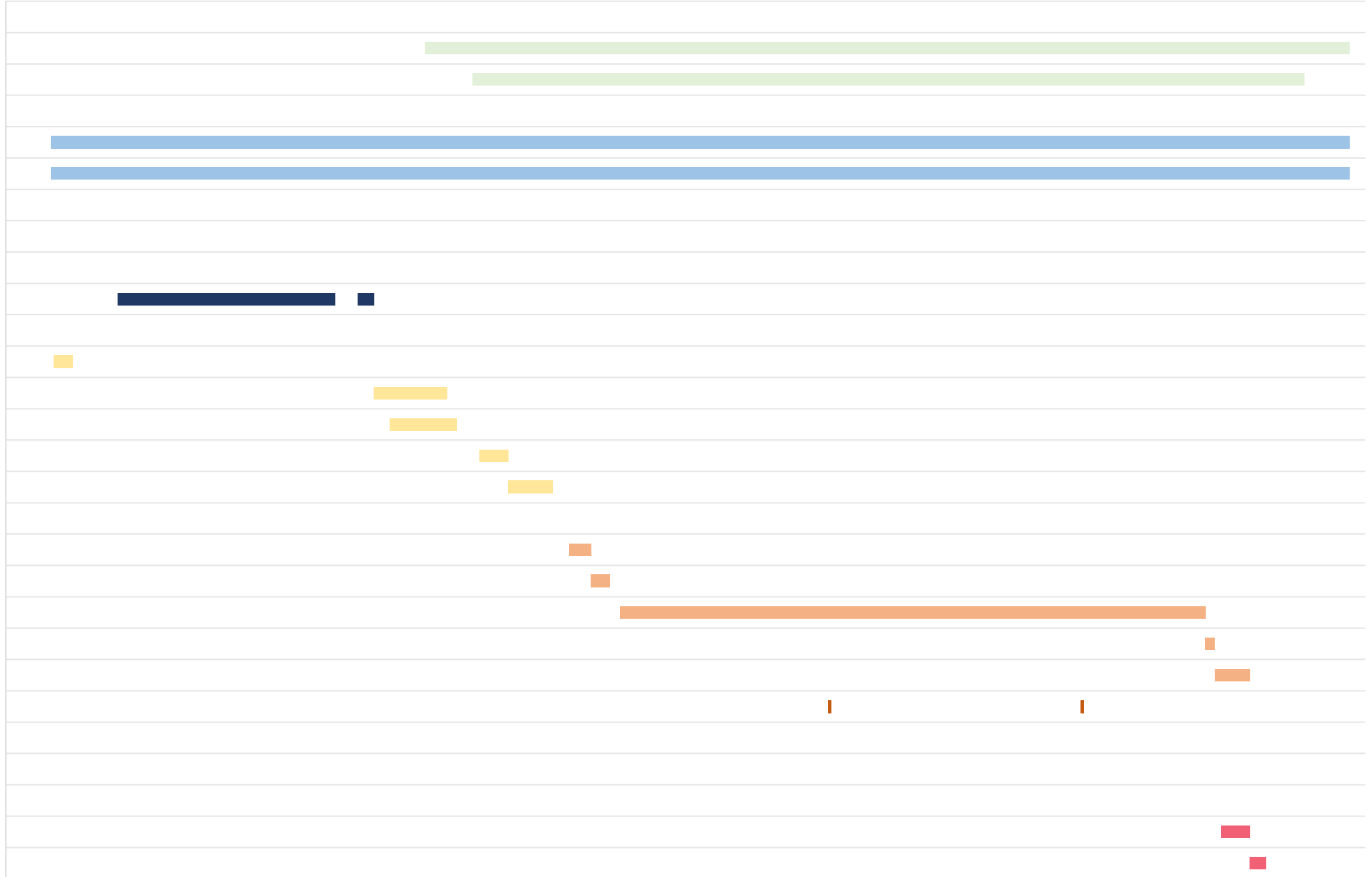
Change of instruments

Rinse of camera lens

Technical Errors

Equipment clean up

Preparing the patient for awakening



Surgery 20

07:40

08:52

10:04

11:16

Patient at the OR room

Patient under anesthesia

Scrub Nurse

Circulating Nurse

Supervised Circulating Nurse

Nurses released for a break

Nurse leaves OR room

Starting the robotic system

Unpacking of equipment

Draping of the robotic arms

Positioning of the patient

Preparation of the surgical field

Port Placement

Docking

Console Time

Undocking

Skin Closure

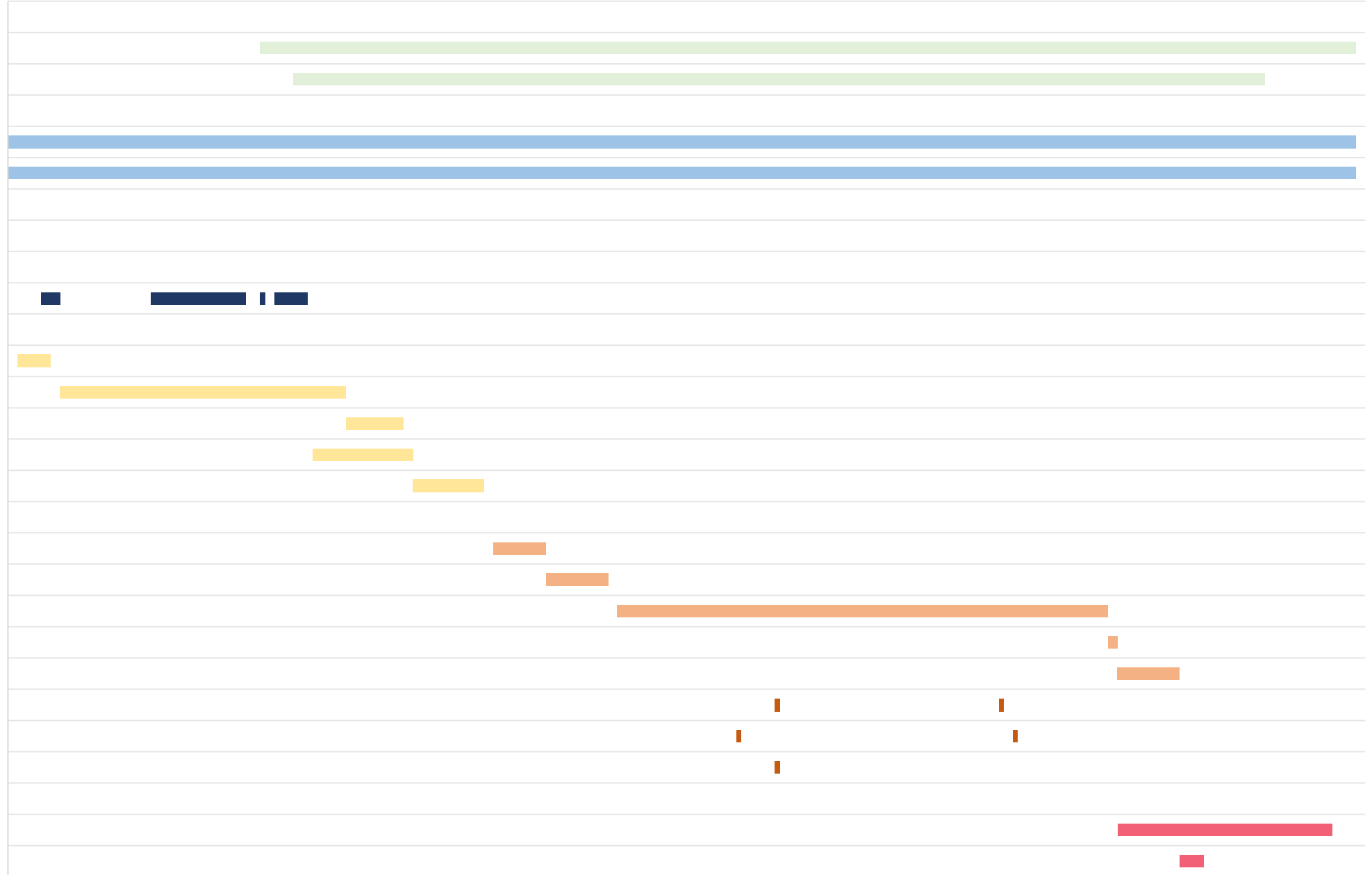
Change of instruments

Rinse of camera lens

Technical Errors

Equipment clean up

Preparing the patient for awakening



Surgery 21

07:40

08:52

10:04

11:16

12:28

Patient at the OR room

Patient under anesthesia

Scrub Nurse

Circulating Nurse

Supervised Circulating Nurse

Nurses released for a break

Nurse leaves OR room

Starting the robotic system

Unpacking of equipment

Draping of the robotic arms

Positioning of the patient

Preparation of the surgical field

Port Placement

Docking

Console Time

Undocking

Skin Closure

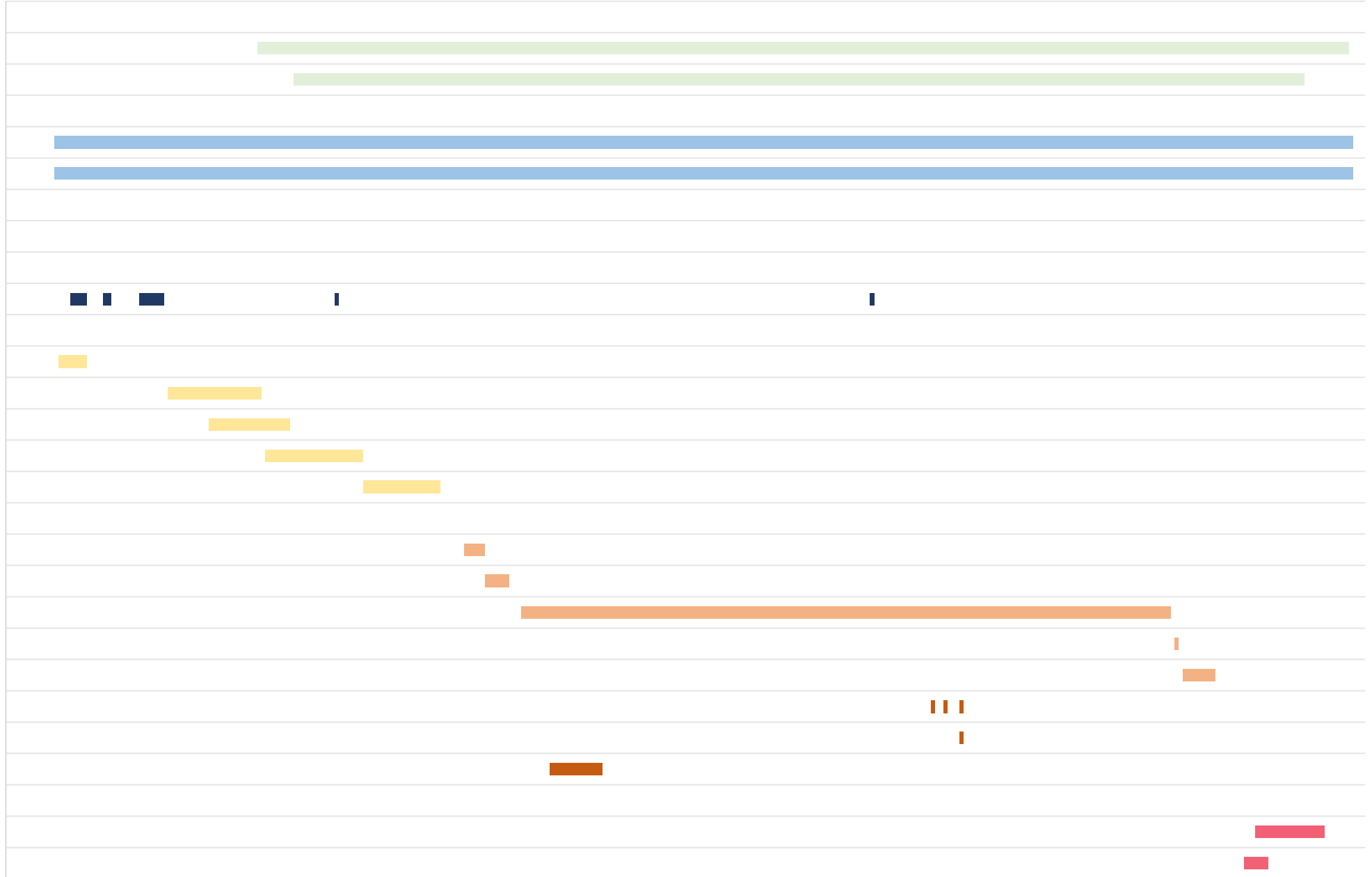
Change of instruments

Rinse of camera lens

Technical Errors

Equipment clean up

Preparing the patient for awakening



Surgery 22

07:40

08:52

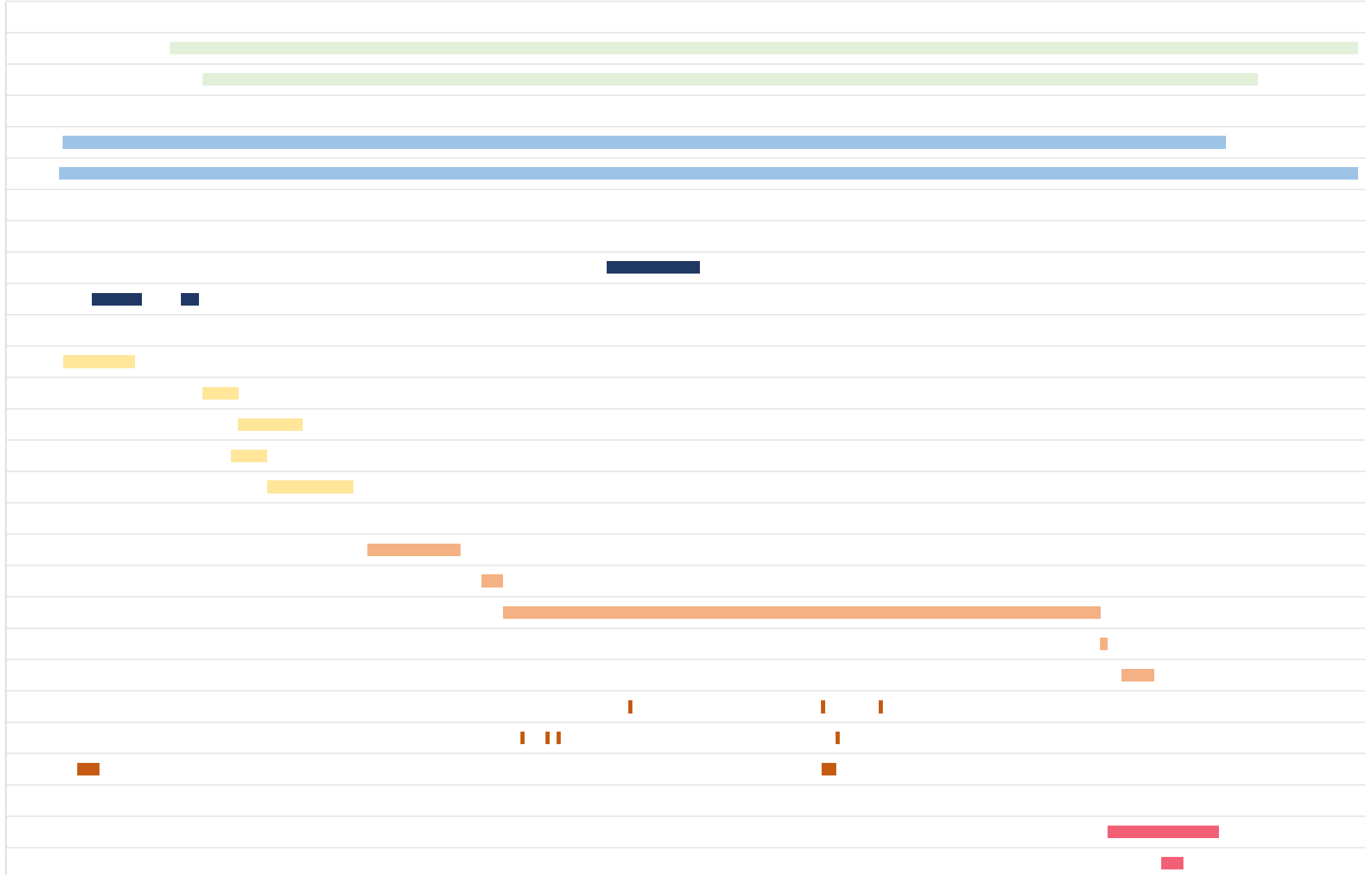
10:04

11:16

12:28

13:40

- Patient at the OR room
- Patient under anesthesia
- Scrub Nurse
- Circulating Nurse
- Supervised Circulating Nurse
- Nurses released for a break
- Nurse leaves OR room
- Starting the robotic system
- Unpacking of equipment
- Draping of the robotic arms
- Positioning of the patient
- Preparation of the surgical field
- Port Placement
- Docking
- Console Time
- Undocking
- Skin Closure
- Change of instruments
- Rinse of camera lens
- Technical Errors
- Equipment clean up
- Preparing the patient for awakening



Surgery 23

07:40

08:52

10:04

11:16

12:28

Patient at the OR room

Patient under anesthesia

Scrub Nurse

Circulating Nurse

Supervised Circulating Nurse

Nurses released for a break

Nurse leaves OR room

Starting the robotic system

Unpacking of equipment

Draping of the robotic arms

Positioning of the patient

Preparation of the surgical field

Port Placement

Docking

Console Time

Undocking

Skin Closure

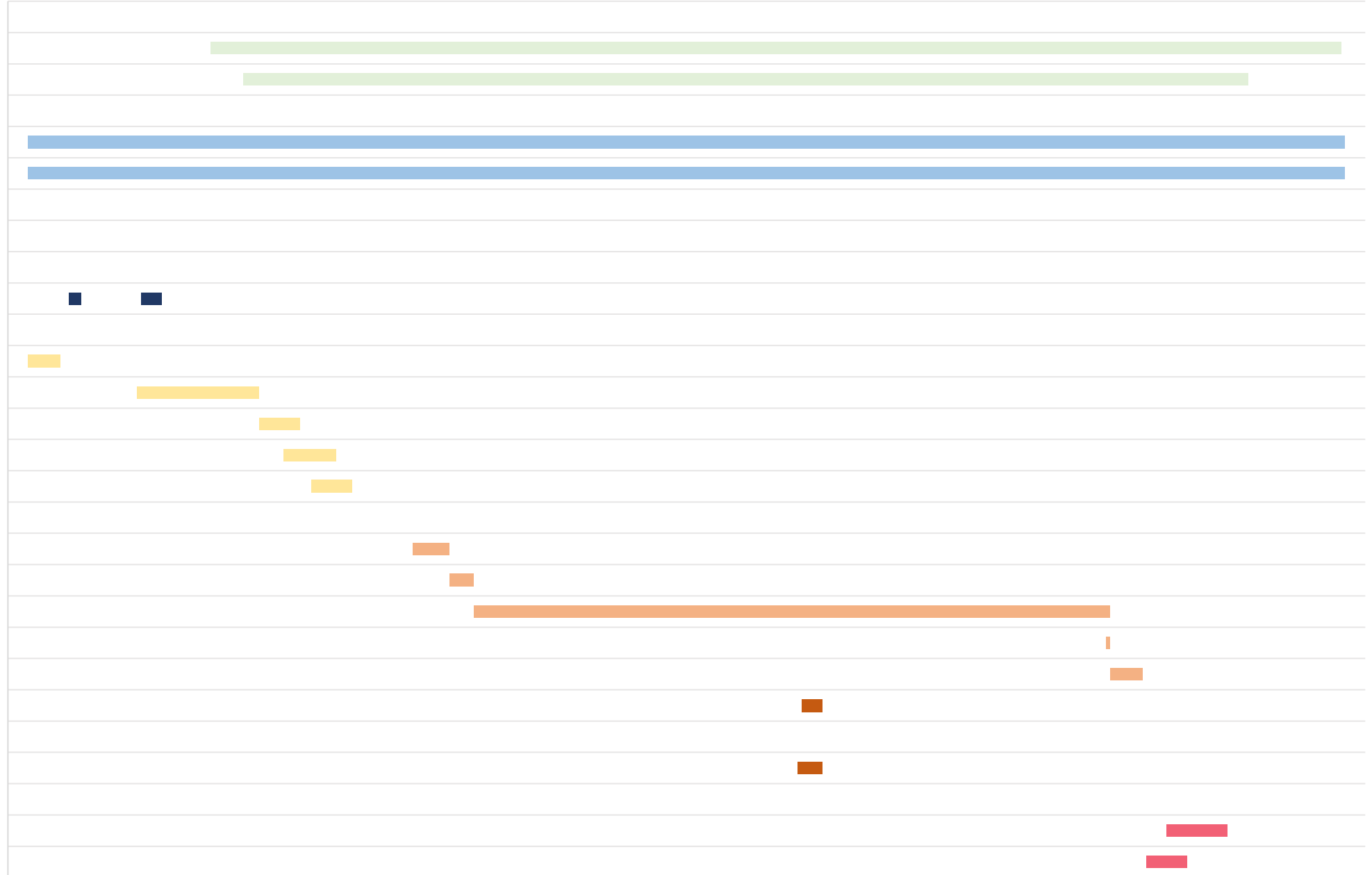
Change of instruments

Rinse of camera lens

Technical Errors

Equipment clean up

Preparing the patient for awakening



Surgery 24

07:40

08:52

10:04

11:16

12:28

Patient at the OR room

Patient under anesthesia

Scrub Nurse

Circulating Nurse

Supervised Circulating Nurse

Nurses released for a break

Nurse leaves OR room

Starting the robotic system

Unpacking of equipment

Draping of the robotic arms

Positioning of the patient

Preparation of the surgical field

Port Placement

Docking

Console Time

Undocking

Skin Closure

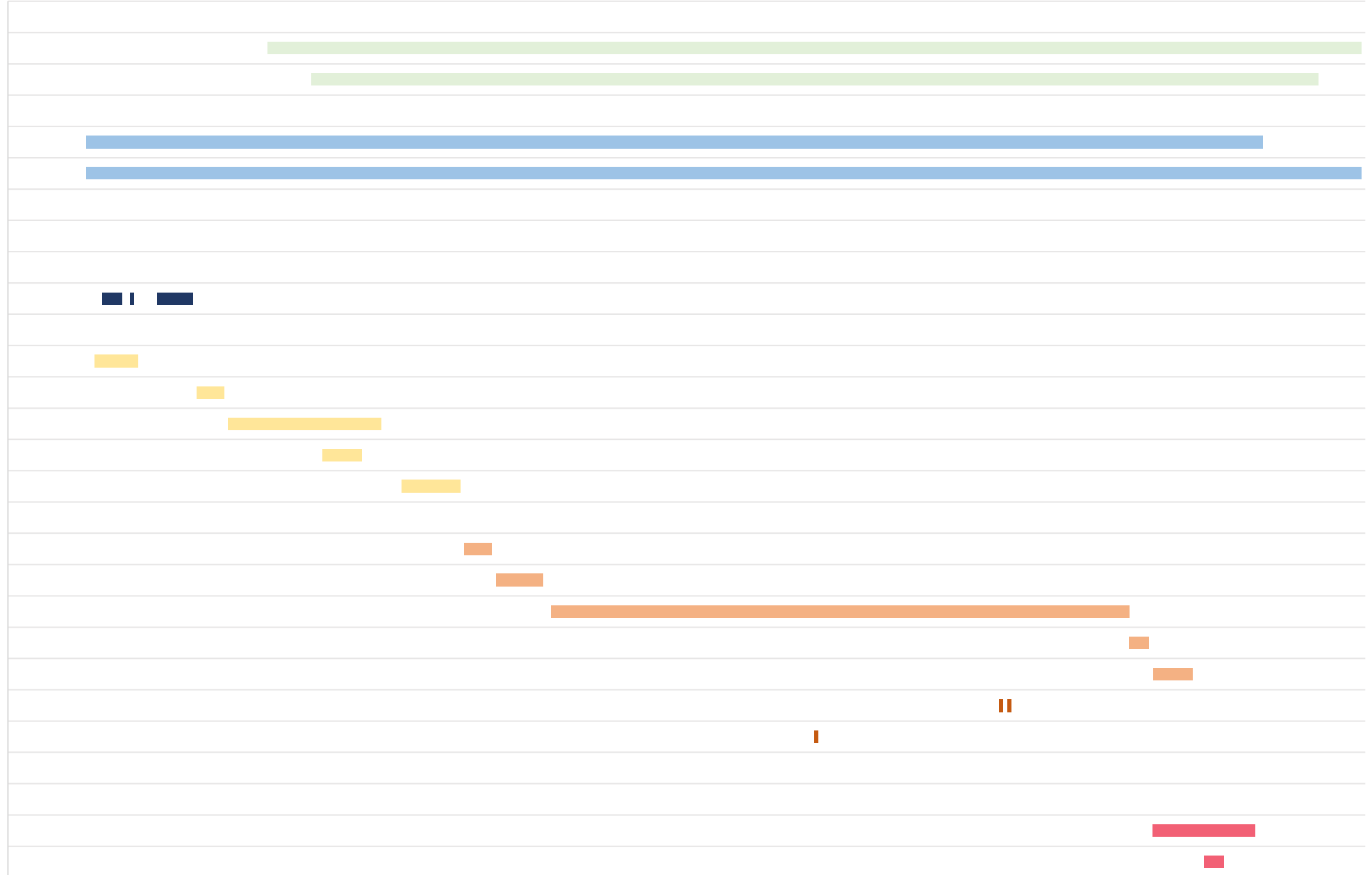
Change of instruments

Rinse of camera lens

Technical Errors

Equipment clean up

Preparing the patient for awakening



Surgery 25

07:40

08:52

10:04

11:16

12:28

13:40

Patient at the OR room

Patient under anesthesia

Scrub Nurse

Circulating Nurse

Supervised Circulating Nurse

Nurses released for a break

Nurse leaves OR room

Starting the robotic system

Unpacking of equipment

Draping of the robotic arms

Positioning of the patient

Preparation of the surgical field

Port Placement

Docking

Console Time

Undocking

Skin Closure

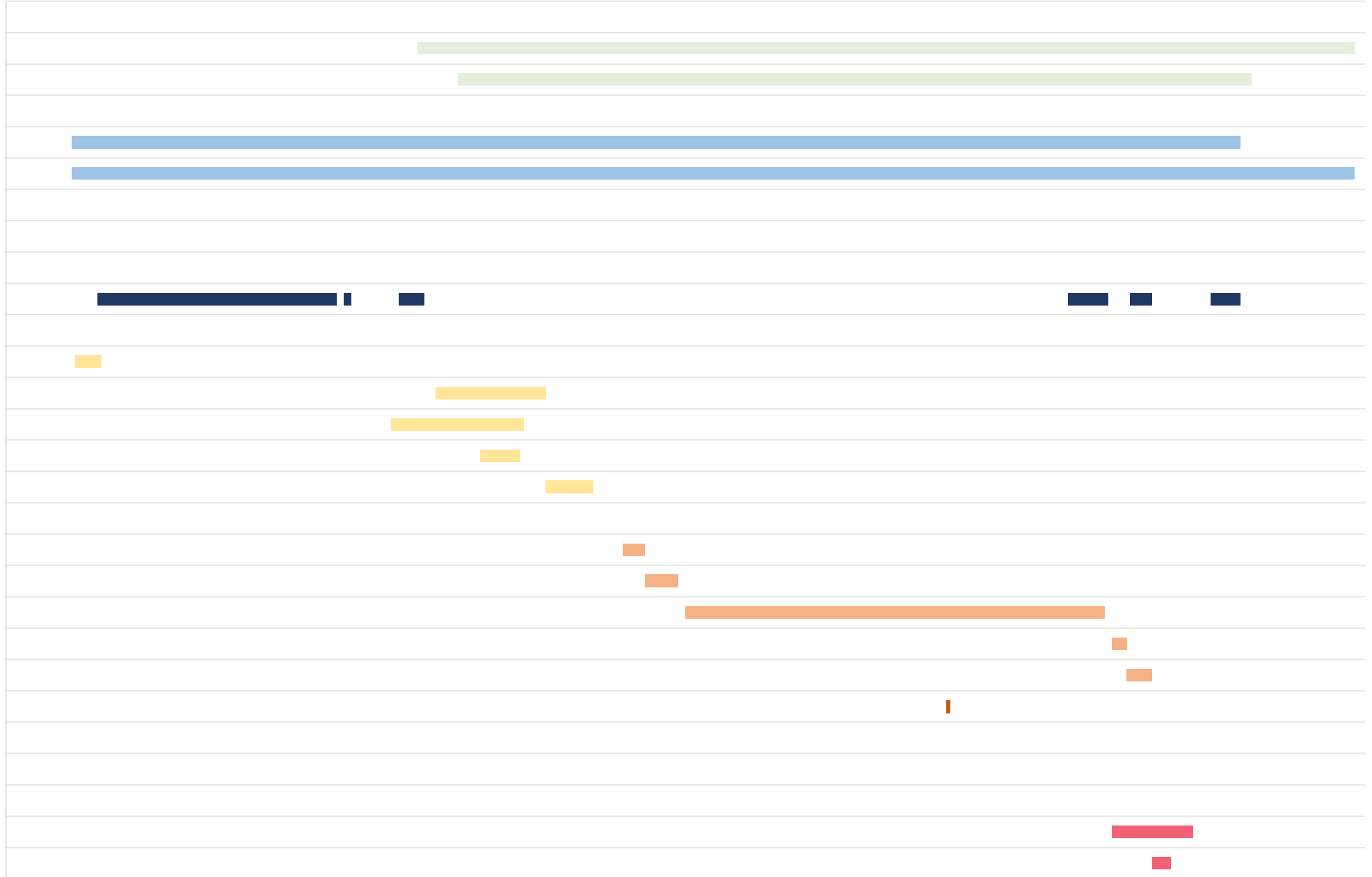
Change of instruments

Rinse of camera lens

Technical Errors

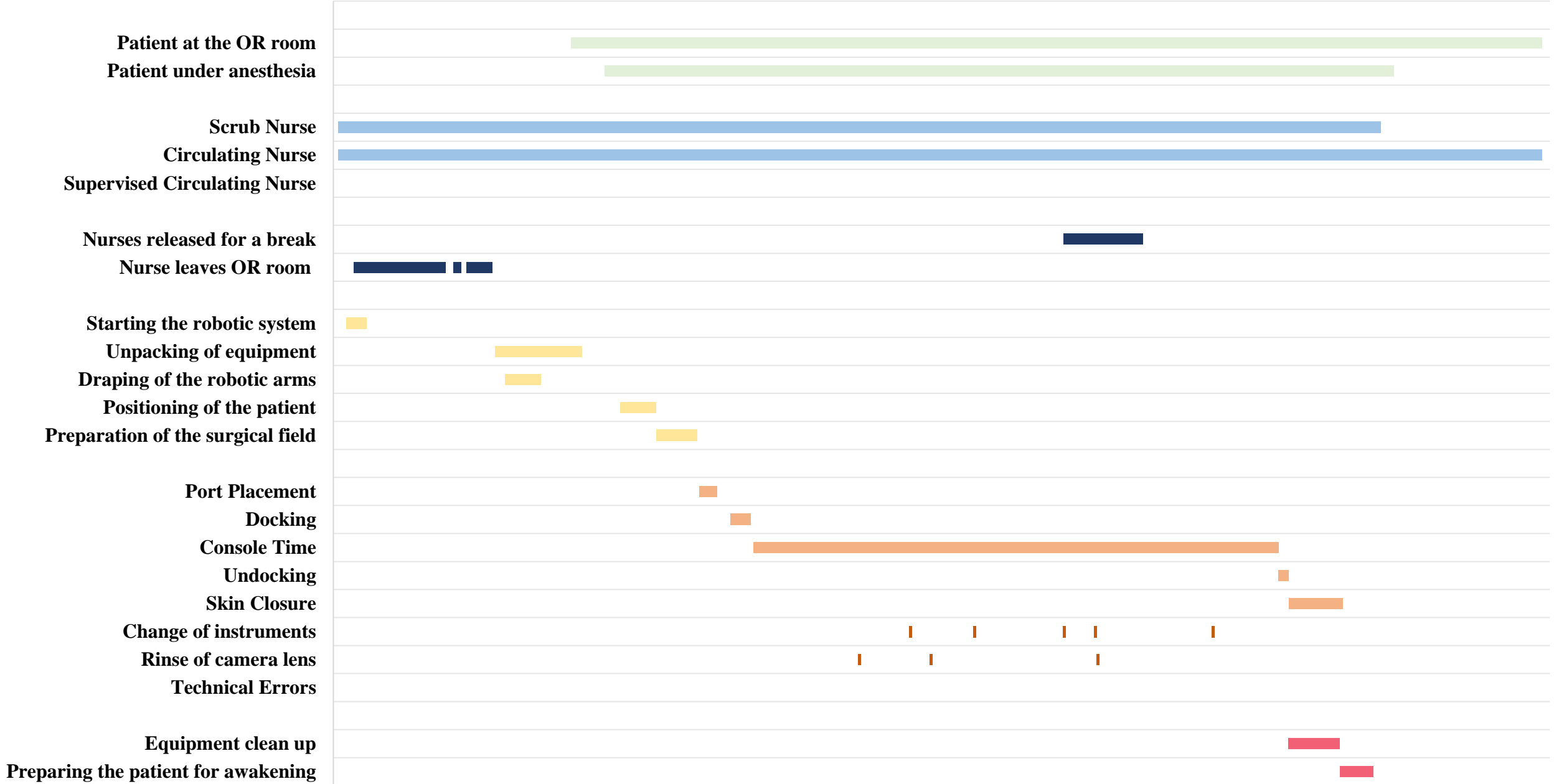
Equipment clean up

Preparing the patient for awakening



Surgery 26

08:30 09:42 10:54 12:06 13:18 14:30 15:42



Surgery 27

07:40

08:52

10:04

11:16

12:28

13:40

Patient at the OR room

Patient under anesthesia

Scrub Nurse

Circulating Nurse

Supervised Circulating Nurse

Nurses released for a break

Nurse leaves OR room

Starting the robotic system

Unpacking of equipment

Draping of the robotic arms

Positioning of the patient

Preparation of the surgical field

Port Placement

Docking

Console Time

Undocking

Skin Closure

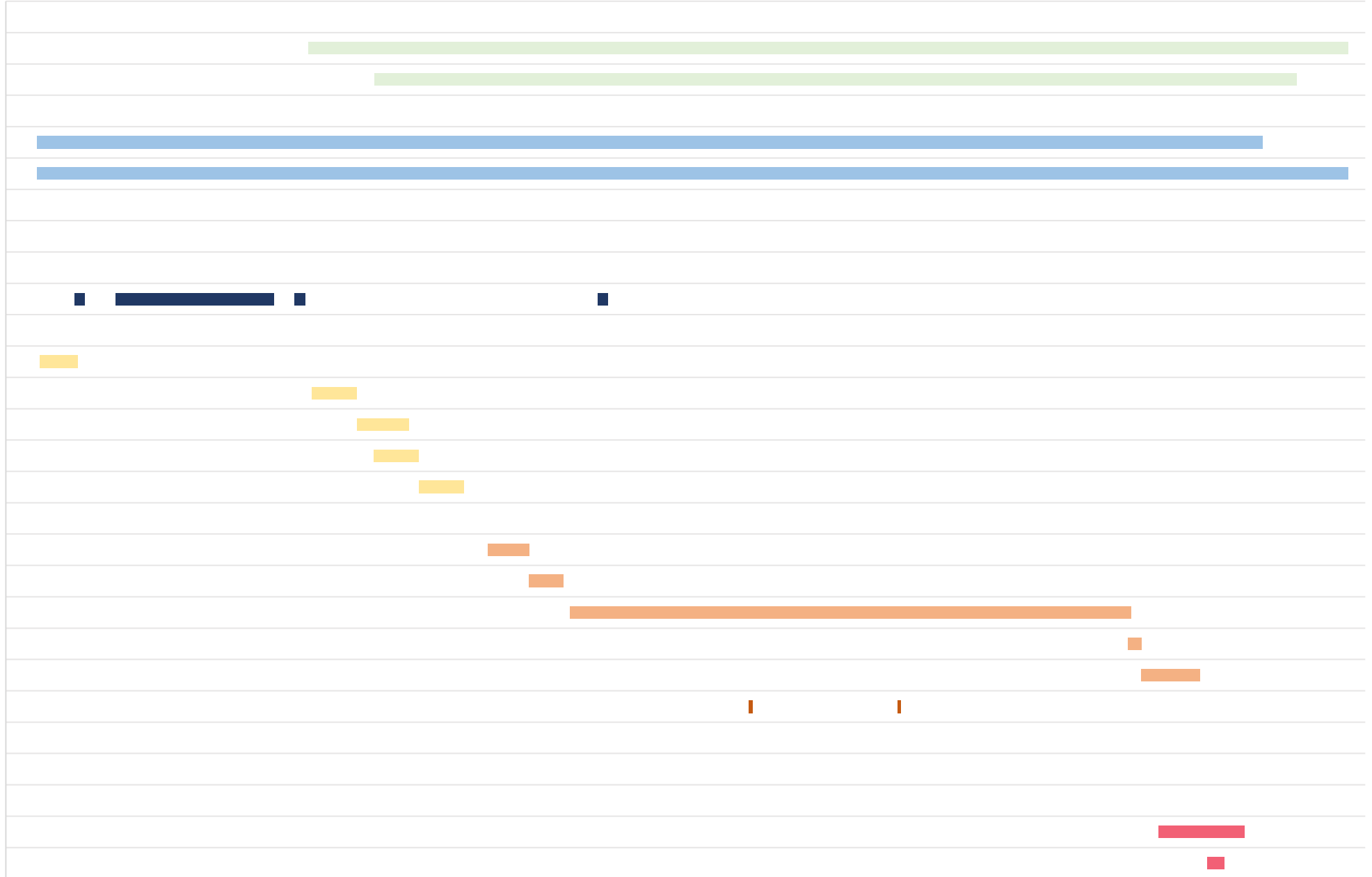
Change of instruments

Rinse of camera lens

Technical Errors

Equipment clean up

Preparing the patient for awakening



Surgery 28

07:40

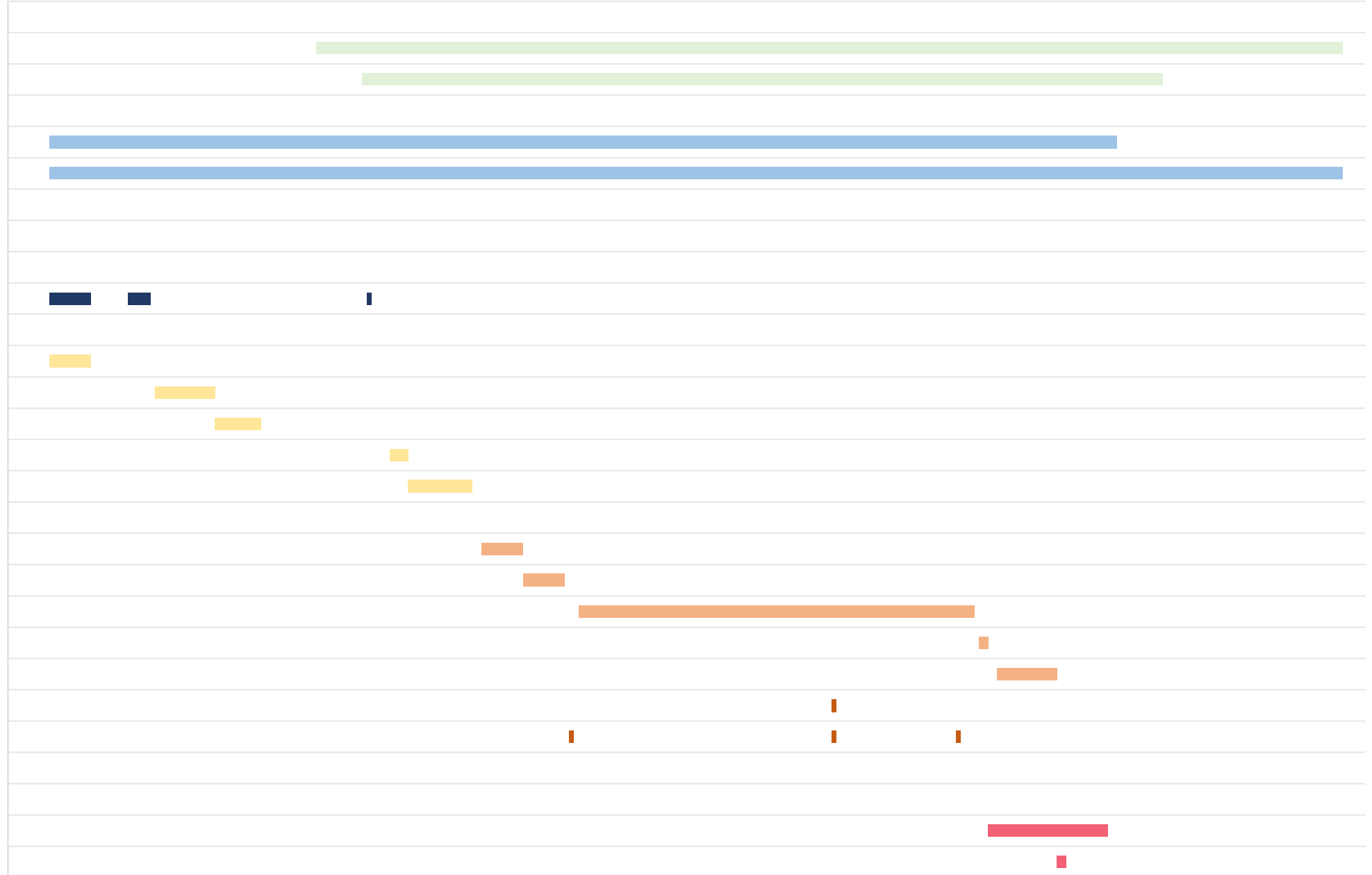
08:52

10:04

11:16

12:28

- Patient at the OR room
- Patient under anesthesia
- Scrub Nurse
- Circulating Nurse
- Supervised Circulating Nurse
- Nurses released for a break
- Nurse leaves OR room
- Starting the robotic system
- Unpacking of equipment
- Draping of the robotic arms
- Positioning of the patient
- Preparation of the surgical field
- Port Placement
- Docking
- Console Time
- Undocking
- Skin Closure
- Change of instruments
- Rinse of camera lens
- Technical Errors
- Equipment clean up
- Preparing the patient for awakening



Surgery 29

07:40

08:52

10:04

11:16

12:28

13:40

Patient at the OR room

Patient under anesthesia

Scrub Nurse

Circulating Nurse

Supervised Circulating Nurse

Nurses released for a break

Nurse leaves OR room

Starting the robotic system

Unpacking of equipment

Draping of the robotic arms

Positioning of the patient

Preparation of the surgical field

Port Placement

Docking

Console Time

Undocking

Skin Closure

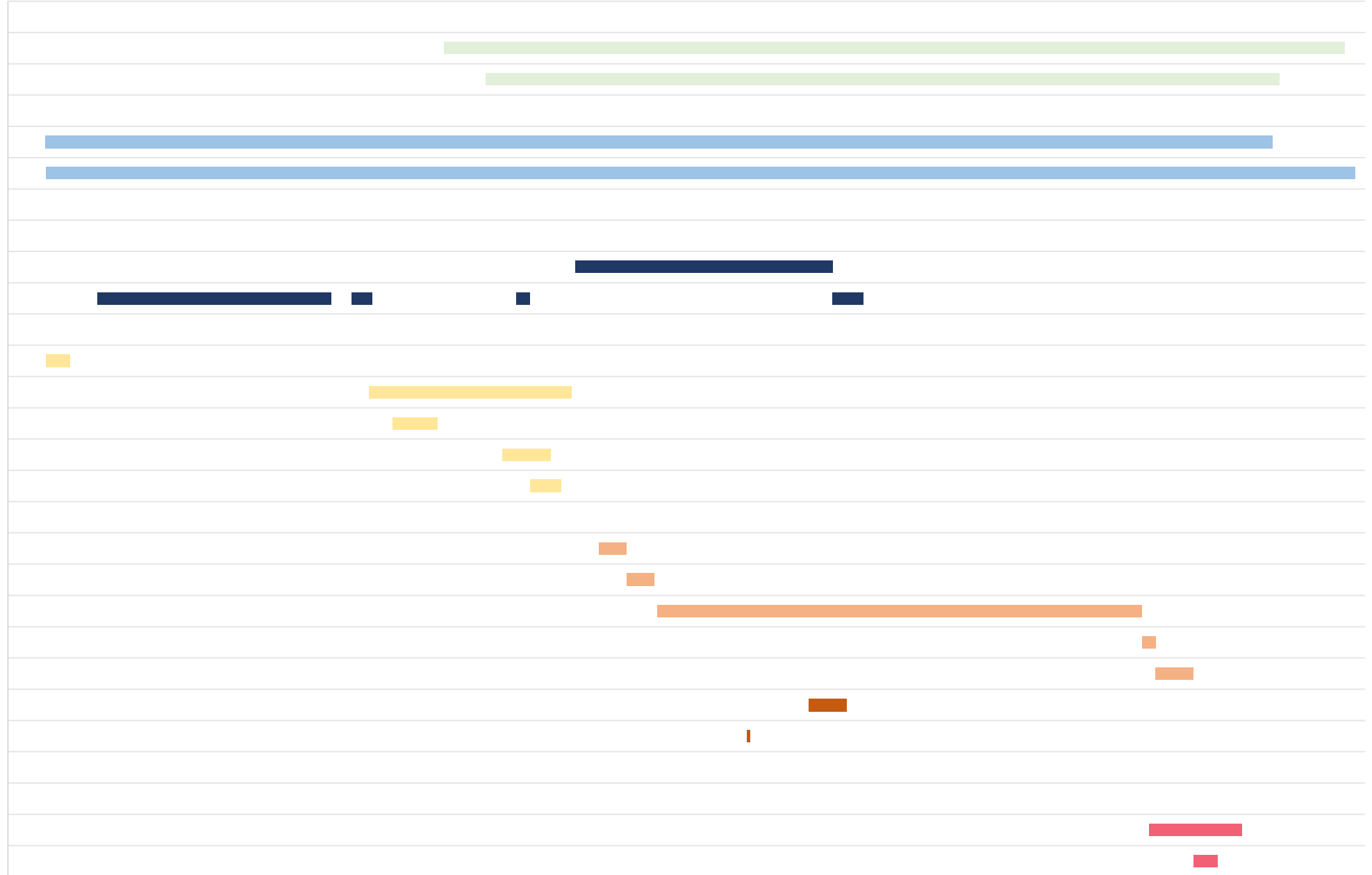
Change of instruments

Rinse of camera lens

Technical Errors

Equipment clean up

Preparing the patient for awakening



Surgery 30

07:40

08:52

10:04

11:16

12:28

Patient at the OR room

Patient under anesthesia

Scrub Nurse

Circulating Nurse

Supervised Circulating Nurse

Nurses released for a break

Nurse leaves OR room

Starting the robotic system

Unpacking of equipment

Draping of the robotic arms

Positioning of the patient

Preparation of the surgical field

Port Placement

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Console Time

Undocking

Skin Closure

Change of instruments

Rinse of camera lens

Technical Errors

Equipment clean up

Preparing the patient for awakening

