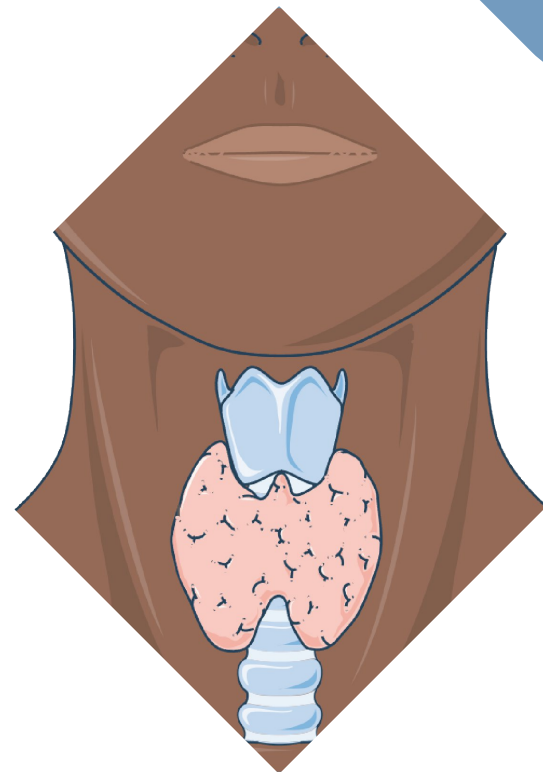
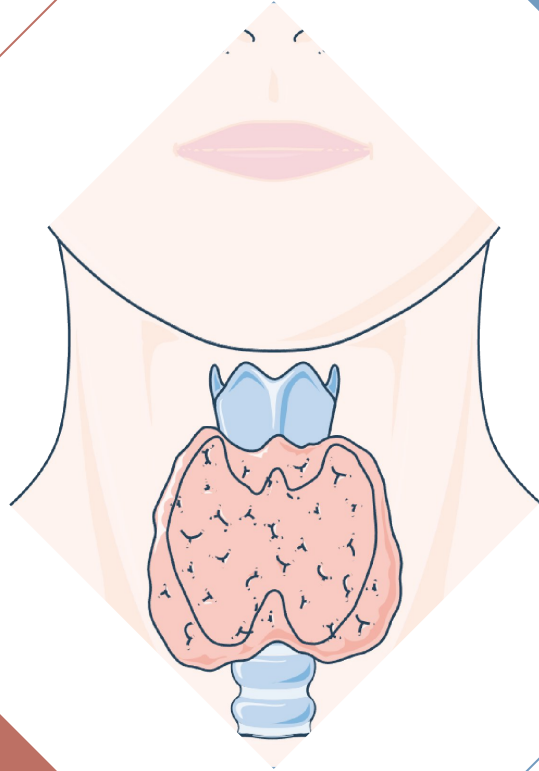


DOUBLE TROUBLE: ANESTHESIA CONSIDERATION IN A CASE OF ANAPLASTIC CARCINOMA THYROID POSTED FOR HEMITHYROIDECTOMY WITH SEVERE MR AND LOW EJECTION FRACTION

Presenter: Dr Sabyasachi Mohapatra (Resident)
Department of Anaesthesia
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01

The disease and presentation

CASE

•CHIEF COMPLAINTS

56 years old female patient was admitted with complaints of swelling in front of neck, difficulty in swallowing and difficulty of breathing on strenuous activity since 20 days.

History of presenting illness

Swelling in anterior part of neck since 1 year.

- Dysphagia for solids and liquids since 1 month.
- Breathlessness NYHA grade II since 20 days.
- Generalized body weakness since 20 days.
- Change of voice since 10 days.
- No sudden increase in size
- No complaints of cold, cough, fever/loose stools/weight gain or loss/change in appetite
- No complaints of chest pain, palpitations.
- No history of orthopnea and paroxysmal nocturnal dyspnea.

PAST HISTORY

- Known case of type II diabetes mellitus since 7 years.
On T. Metformin 500mg BD.
- Known case of hypertension since 7 years. On T. Telmisartan 40mg OD, T. Ramipril 2.5mg OD.
- On admission patient has recorded BP readings of 90/60, so stopped on current medications and started on T. Amlodipine 2.5mg only if BP >140/90.
- Known case of rheumatic heart disease since 2011.
On T. Ecosprin 75 mg + T. Atorvastatin 40mg OD.
- Not a K/c/o Bronchial Asthma /Tuberculosis /epilepsy/IHD/stroke.
- No h/o any previous hospitalization /blood transfusion/radiation exposure.
- No h/o any surgical procedure and ICU Stay.

PERSONAL HISTORY

- Mixed diet.
- Normal bladder/bowel habits.
- Sleep adequate
- Socio Economic Status: Lower middle class family.
- No h/o any allergy.
- Denies addictions.

FAMILY HISTORY

- No H/o similar complaints in the family.

GENERAL EXAMINATION

- Patient is afebrile, conscious, co-operative and well oriented to time, place and person.
- Moderately built and nourished.
- Ht - 156cm, Wt - 55kg, BMI - 22.6 kg/m²
- No pallor, icterus, cyanosis, clubbing, lymphadenopathy and edema.
- Pulse 88bpm , regular in rhythm , normal volume. No radio-radial or radio femoral delay. All peripheral pulses felt.
- BP :90/60 right arm in supine position.
- JVP - normal.

LOCAL EXAMINATION

- Inspection : 3x4cms round shaped solitary mass in the midline, moves with deglutition.
- Palpation : swelling surface- smooth, consistency-firm and nodular, no tenderness
- Percussion :
- Auscultation : No bruit over swelling.
- A negative Pemberton sign.



AIRWAY EXAMINATION

- No loose tooth or dentures.
- Mouth opening - 2 Finger.
- MPC- III
- Thyromental distance - $>6.5\text{cms}$
- Sternomental distance $>12.5\text{cms}$.
- TMJ - mobile
- Neck movements - Adequate range of motion



SYSTEMIC EXAMINATION

CARDIOVASCULAR SYSTEM

Inspection: Precordium normal in shape. Apical impulse seen on 5th intercostal space, midclavicular line. No engorgement of superficial veins No visible pulsations seen.

Palpation: Apex beat in 5th Intercostal space, medial to left midclavicular line. No parasternal heave. No appreciable thrill or pulsation

Percussion : Left, right and upper borders are normal.

Auscultation: S1 & S2 heart sounds heard. Pansystolic murmur heard at the apex.

RESPIRATORY EXAMINATION

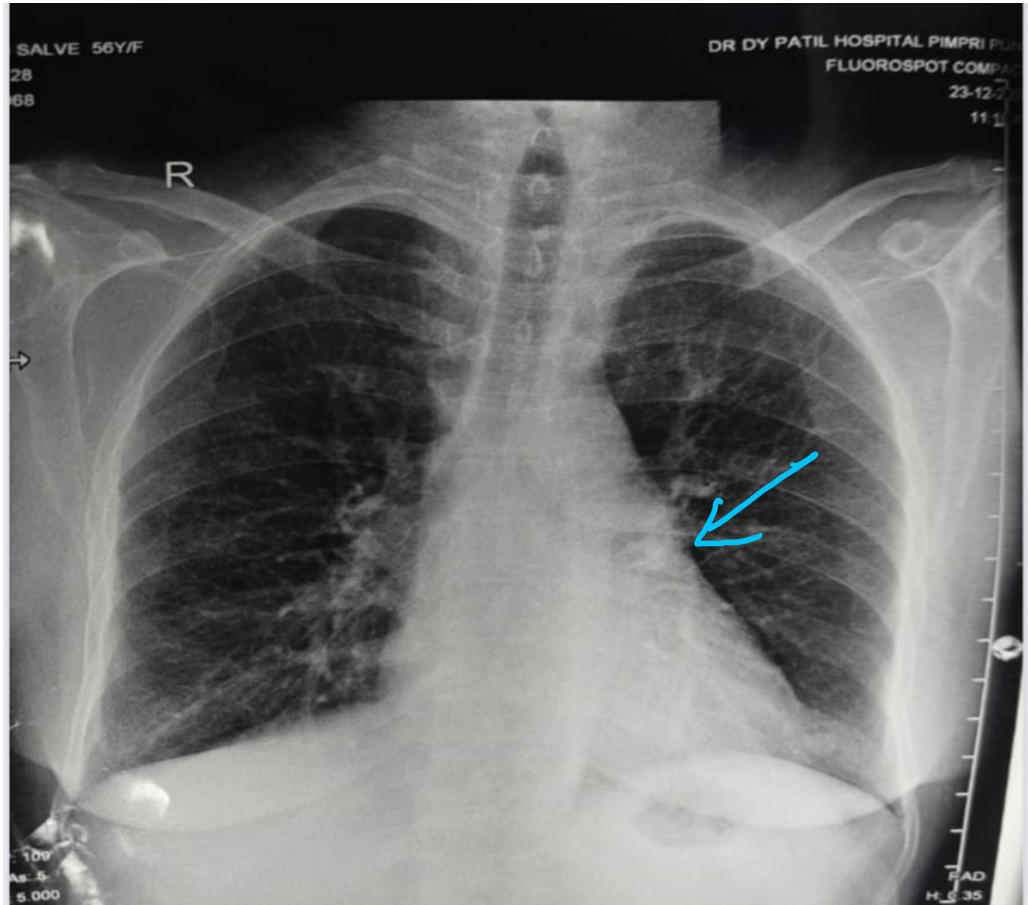
- Inspection: B/L chest wall movements - symmetrical during respiration.
- Palpation: All findings of inspection are confirmed, trachea central in position.
Chest expansion is B/L symmetrical.
No tenderness or bony deformity.
- Percussion: Resonant sound in all lung fields.
Normal liver dullness in 5th, 7th and 9th ICS
- Auscultation: B/L air entry equal
Vesicular breath sounds +.
No adventitious sounds heard.

INVESTIGATIONS

Hb	12,9 g/dl
TLC	10800/mcgl
Platelets	2.7 lakhs
PT/INR	11.7/0.98
RBS	182
HbA1c	8
Urea	33 mg/dl
Creatinine	0.72 mg/dl
Na /K/Cl	130/3.8/100
LIVER FUNCTION TEST	
Total bilirubin / conjugated bilirubin / unconjugated bilirubin	1.06/0.53/0.53mg/dl
SGOT	22 U/Lt
SGPT	18 U/Lt
Alkaline phosphate	100 U/Lt
Total protein	5.4
Albumin	3.1
THYROID FUNCTION TEST	
TSH	2uIU/dl
T3	0.81ng/dl
T4	13.17mcg/dl (Increased)

CHEST XRAY

- Left heart border straightening.
- increase bronchovesicular markings
- Normal costophrenic angle



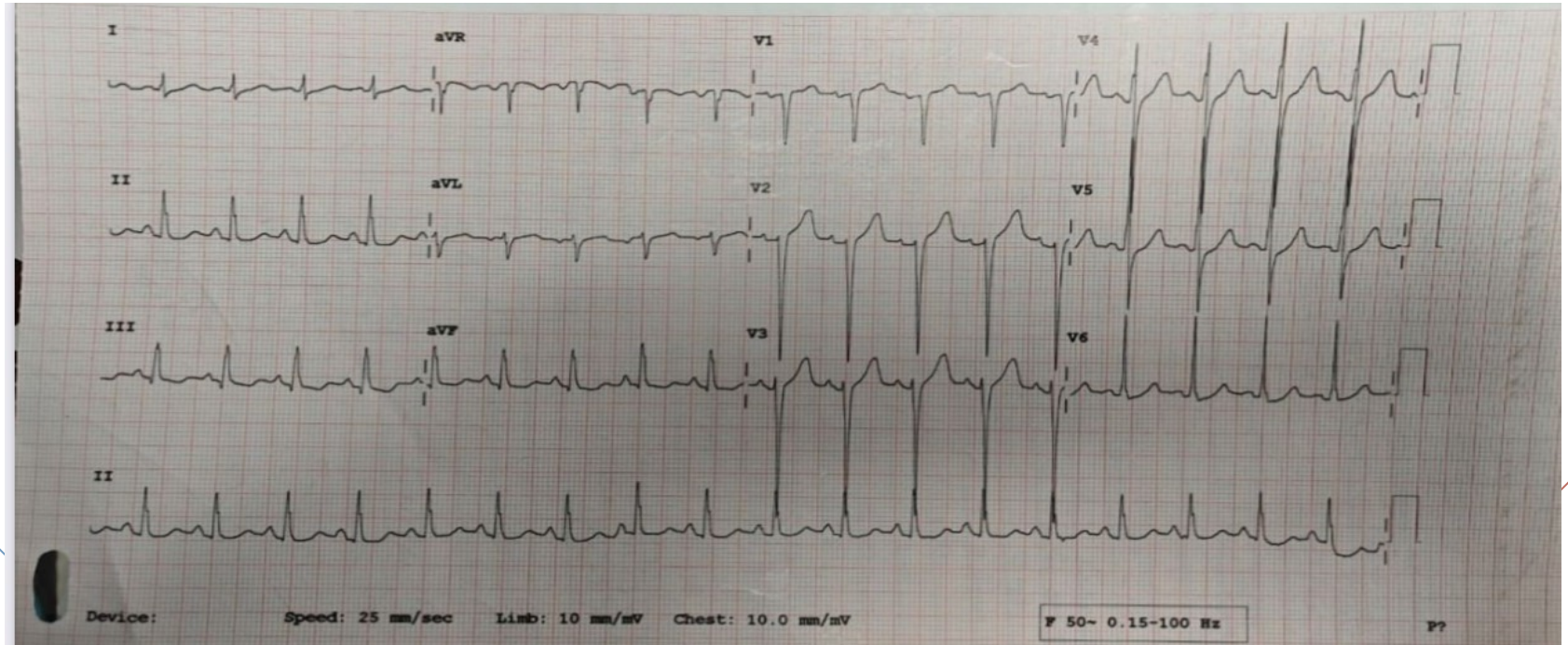
NECK XRAY

- No compression and deviation of trachea



ECG

- sinus tachycardia.



2D ECHO

- Rheumatic affection of mitral and aortic valve.
- Moderate to severe mitral regurgitation.
- Global LV hypokinesia (Anterior > Inferior)
- Grade II Diastolic Dysfunction.
- Severe LV Systolic Dysfunction, LVEF - 30%.
- MILD TR, MILD PAH.

IVDL

- B/L Vocal cords mobile
- No abnormal obvious growth
- No pooling of saliva
- No phonatory gap

- **CT NECK** : Thyroid appears bulky with fairly well heterogenously hypodense lesion with multiple coarse calcifications noted on right lobe 21x28x31mm.
- **FNAC**: Features s/o undifferentiated/anaplastic carcinoma of thyroid
 - High grade pleomorphic neoplasm
 - Poorly differentiated carcinoma, metastatic tumor

- **USG NECK** : TIRADS V lesion involving isthmus of right lobe of thyroid , extrathyroidal extension inferiorly measuring 23x25x27mm

PROVISIONAL DIAGNOSIS

56 Years old female known case of diabetic mellitus, hypertension, rheumatic heart disease with severe MR , EF 30% diagnosed with Anaplastic Carcinoma Thyroid posted for Hemithyroidectomy.

A multidisciplinary approach

Considering the comorbid conditions of the patient, the patient was high risk ASA grade III so a multidisciplinary meeting with the patient and family was conducted along with surgical and ICU team.

PRE OPERATIVE ADVICE

- Patient and family were explained about the plan of anesthesia and risks associated.
- Get high risk , ICU sos Ventilatory Consent.
- Book adequate blood & blood products.
- Skip OHA/IHA on morning of surgery.
- To stop all anti-hypertensive medications (If BP \uparrow 140/90, then give Tab Amlodipine 5 mg).

Anesthetic Management

- On day of surgery: Patients Vitals : blood pressure 100/60mmHg, pulse rate 80bpm, SpO2 100% @ room air.
- The plan was general anaesthesia with invasive monitoring with central line and arterial line.
- Patient shifted inside the OT and all ASA standard monitors like ECG, BP cuff, pulse oximetry attached. IV fluids started.

- Baseline vitals around 8:30am : BP 100/68mmHg, HR 68bpm, SpO2 100%.
- The patient was positioned supine. Under all aseptic precautions 7F triple lumen central venous catheter was inserted into the right subclavian vein under ultrasound guidance.
- Subsequently, an arterial line was inserted in the left radial artery for beat to beat blood pressure monitoring.
- Patient was started with injection Milrinone 0.025mcg/kg/min infusion and injection Noradrenaline 0.05mcg/kg/min. These inotropes were titrated according to blood pressure.
- **Premedications:** Inj Midazolam 1 mg
- Preoxygenation with 100% oxygen for 3 mins.

Induction :

- Inj Fentanyl 100mcg IV
- Inj Etomidate 10 mg IV
- Confirmed the bag and mask ventilation and Inj Succinylcholine 100 mg IV given.
- Patient was intubated with 7 size cuffed PVC tube under C-MAC guidance and bilateral air entry checked and EtCO₂ and tube fixed at 20 cm. Throat packing done.

Started on volume control mode with:

- Tidal Volume: 380
- RR: 12
- PEEP: 2
- Peak and Plateau Pressures: 16/14
- FiO₂ : 50% on O₂ , Air 1:1 •Inhalational sevoflurane 1.5%.
- Muscle relaxant Inj Vecuronium given 5 mg IV. Subsequently 1mg given as a topup.

Throughout the procedure, vitals were closely monitored, including invasive blood pressure (IBP), central venous pressure (CVP), heart rate (HR), SpO₂, and end-tidal CO₂ (EtCO₂).

Time	BP (mmHg)	HR (bpm)	SpO ₂	EtCO ₂	CVP
9:15am	110/70	70	100%	26	8
10:15am	100/60	84	100%	30	9
11:15am	95/60	90	100%	31	7
12:15 pm	98/60	85	100%	30	9
1:15 pm	90/65	82	100%	29	10

AB

Time	pH	PO2	PC O2	HCO3	BE	Lac	Hb	Glu	Na	K	Ca
9:58a m	7.4 3	464	33	21.9	1.8	1.7	11.8	179	133	2.7	1.1 3
11:07a m	7.3 9	282	25	22.5	3.2	1.3	11.2	181	133	2.9	1.0 9
2:30p m	7.3 7	252	41	21.1	-4.7	1.7	11.8	239	132	3.2	1.0 8

Intraoperative Medications & Fluids

- As per the hemodynamics , inotropic infusions were stopped at the end of procedure
 - Total Input: 1000 cc Ringer lactate
 - Inj. KCl 20 mEq administered.
 - Estimated Blood Loss: 200 cc
 - Urine Output: 1200 cc
-
- The procedure was completed without complications.
 - The patient was assessed for adequate respiratory effort postoperatively.
 - Reversal Sugammadex 200 mg IV given. After confirming the patient was awake, responsive to commands, and able to move all limbs, extubation was performed.
 - The patient remained hemodynamically stable post-extubation.



IC CHALLENGES

Classification & Severity of MR

- PRIMARY MR : Structural abnormality of the mitral valve (e.g., prolapse, endocarditis, defect or cleft leaflets).
- SECONDARY MR : Ventricular dysfunction causing valve incompetence (e.g., ischemic cardiomyopathy, dilated cardiomyopathy, restriction of mitral leaflets).

SEVERITY GRADING BASED ON ECHOCARDIOGRAPHY :

- Mild: <30% regurgitant fraction
- Moderate: 30-50%
- Severe: >50%

- The risk of non cardiac surgery in these patients depends on the
 - 1)etiology
 - 2) severity
 - 3) level of hemodynamics
 - 4)non cardiac surgery risk profile
- Predictors of increased cardiovascular risk in patients with moderate to severe MR undergoing non cardiac surgery include :
 - 1)Atrial fibrillation
 - 2)severity of MR
 - 3)comorbidities such as, e.g., diabetes mellitus

- In patients with moderate to severe MR, the cardiac risk of non cardiac surgery is also affected by other heart comorbidities, such as CAD, LV dysfunction, and LV dilatation.
- Hence, besides determining the severity of MR, it is important to define LV function and LV size for the risk stratification of patients.

GOALS OF ANESTHETIC MANAGEMENT

Maintain forward flow and reduce regurgitant fraction- :
Regurgitant flow increases LV volume, leading to dilation.

1. Maintain Preload (Avoid volume overloading, underfilling)
2. Maintain Normal sinus rhythm (increases diastolic time → reduces MR), maintain SVR.
3. Maintain afterload (to promote forward ejection)- Noradrenaline
4. Preserve myocardial contractility- Etomidate, Sevoflurane, Milrinone
5. Maintain coronary perfusion pressure

- In severe MR, afterload reduction and inotropic support are essential to maintain forward stroke volume. Milrinone may be beneficial due to its combined inotropic and vasodilatory effect.
- Vasodilatory inotropes like milrinone may necessitate concurrent use of vasopressors to preserve perfusion pressure in patients with borderline or low systemic vascular resistance.
- Together, they balance each other:
 - Milrinone improves contractility and reduces afterload
 - Noradrenaline supports blood pressure and perfusion

- In this high-risk case with severe MR and poor LV function, milrinone was chosen for its inotropic and vasodilatory properties to improve forward cardiac output and reduce regurgitation.
- However, the associated vasodilation could compromise perfusion pressure.
- Hence, noradrenaline was added to support mean arterial pressure, ensuring adequate organ perfusion and coronary flow.
- This balanced pharmacologic approach optimizes hemodynamics, minimizes MR worsening, and enhances surgical safety.

REFERENCES

1. Miller RD, Eriksson LI, Fleisher LA, Wiener-Kronish JP, Cohen NH, Young WL. Miller's Anesthesia. 9th ed. Philadelphia: Elsevier; 2020. Chapter 50: Anesthesia for Patients with Cardiovascular Disease.
2. Hines RL, Marschall KE. Stoelting's Anesthesia and Co-Existing Disease. 7th ed. Philadelphia: Elsevier; 2018. Chapter 5: Cardiovascular Diseases.
3. Jalali Y, Jalali M, Števlík J. Perioperative management of valvular heart disease in patients undergoing non-cardiac surgery. J Clin Med. 2024;13(11):3240. doi:10.3390/jcm13113240

CONCLUSION



- Anaplastic carcinoma of the thyroid is a rare and highly aggressive malignancy with poor prognosis, often requiring urgent surgical intervention.
- The presence of severe mitral regurgitation with low ejection fraction significantly increases the anesthetic and perioperative risk, necessitating meticulous preoperative optimization, multidisciplinary planning, and careful intraoperative management.
- A balanced approach to maintain hemodynamic stability while minimizing myocardial oxygen demand is critical in achieving a favorable surgical outcome in such high-risk patients

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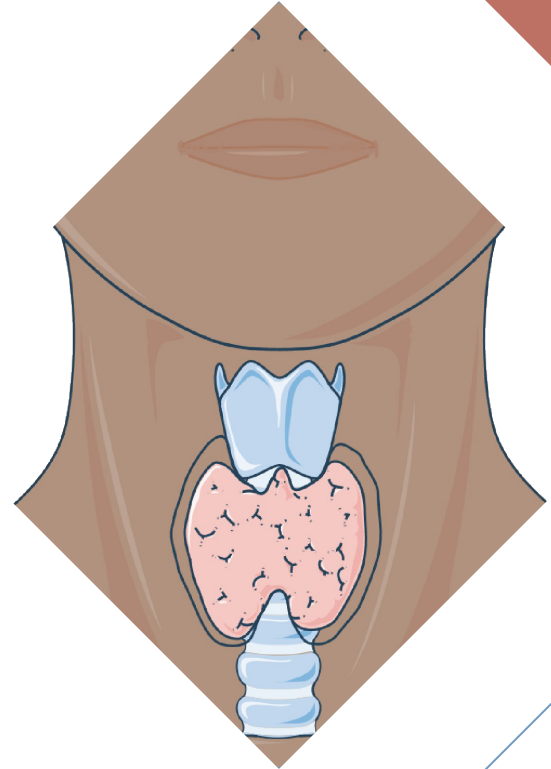
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Who is at risk?



Genetic factors

When a genetic factor puts a person at risk of developing an illness, it means that there is a hereditary component to that illness. This can be due to specific genetic mutations or variations that increase a person's susceptibility to developing the illness



Environmental factors

When an environmental factor puts a person at risk of developing an illness, it means that exposure to certain substances, conditions or situations in the environment can increase the likelihood of developing that illness

Types of diseases



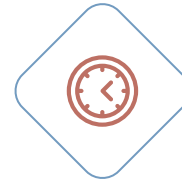
Types

Diseases vary based on transmission, like communicable (spreadable) and non-communicable (non-spreadable). They can also differ in duration: acute (short-term) or chronic (long-lasting)



Spread

Diseases spread as communicable or stem from genetics/lifestyle as non-communicable. Recognizing how diseases transmit informs preventive measures, while understanding non-communicable causes aids in lifestyle adjustments



Duration

Diseases range from acute, with sudden symptoms and short span, to chronic, with prolonged effects. Managing acute cases requires swift action, while chronic conditions demand continuous care to alleviate lasting impact

Four main types of treatments



Medical treatment

This involves the use of medications, surgery, radiation therapy, chemotherapy or other medical procedures to treat a particular illness



Behavioral therapy

Behavioral therapies involve various techniques that are used to treat mental health conditions, such as depression, anxiety and addiction



Alternative therapies

Alternative therapies include a range of treatments that are not considered part of conventional medical practice



Lifestyle changes

Lifestyle changes involve making modifications to an individual's diet, exercise habits or other behaviors



Risk factors

Age

Many diseases occur more frequently in certain age brackets

Genetics

Some diseases have a hereditary component and can be passed down through families

Lifestyle

Certain behaviors can increase the risk of developing certain illnesses

Environment


Exposure to certain substances in the environment can increase the risk of developing some diseases

Medical history

A personal or family history of certain illnesses can increase the risk of developing related or similar conditions

Gender

Some illnesses are more common in one gender than the other





10,000

Patients treated

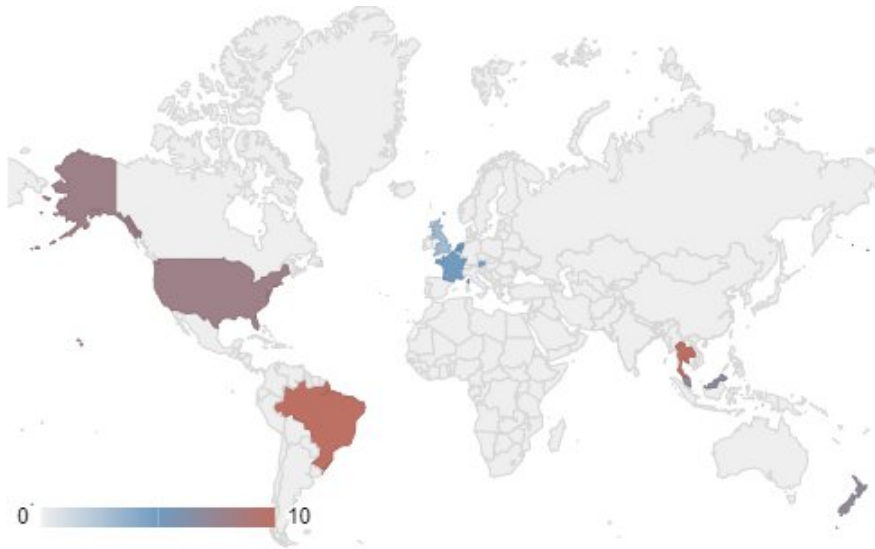
85%

Success rate

1,000

Suffered secondary effects

Disease prevalence

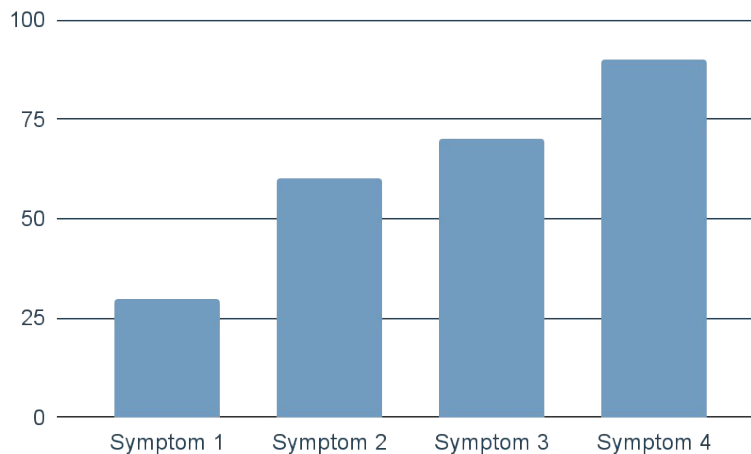


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Symptoms and diagnosis

Most common symptoms

Use this slide to display the most common symptoms of the disease being discussed. Include a graph with a clear title and labels for each axis. You can also explain how the disease is diagnosed, including the types of tests or procedures used, to help your audience understand how it is identified and treated

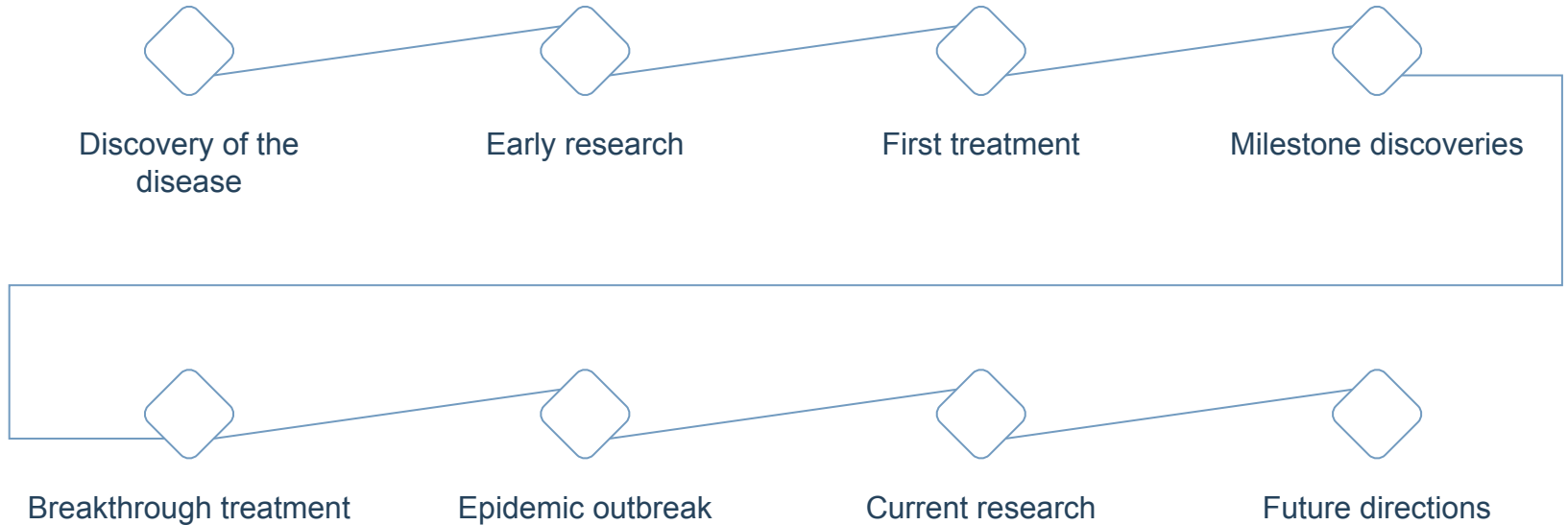


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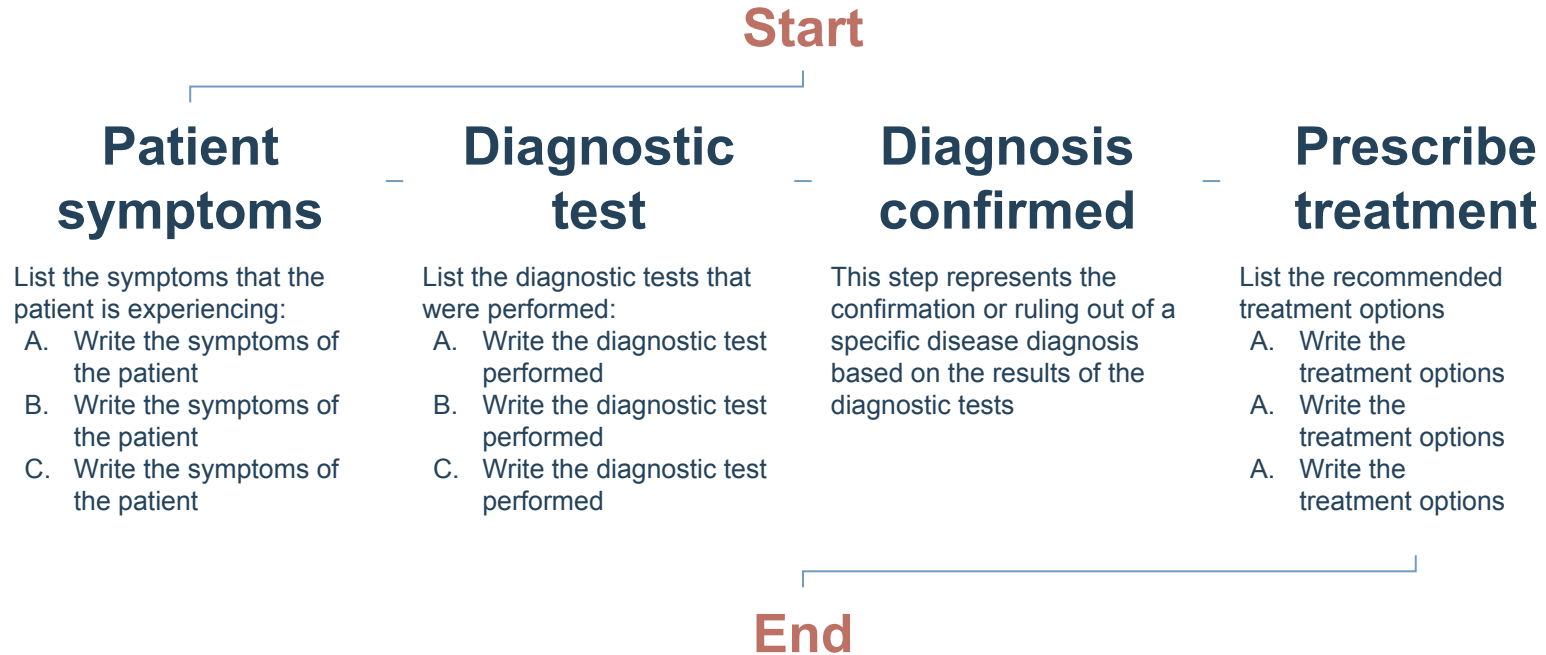
Risk factors and complications

Risk factors	Description	Prevalence	Contributing factors	Complications	Severity
Write the risk factors here	In this part, include a brief description	80% of cases	Write the contributing factors here	In this part, write the complications of the disease	High
Write the risk factors here	In this part, include a brief description	30% of cases	Write the contributing factors here	In this part, write the complications of the disease	Moderate
Write the risk factors here	In this part, include a brief description	40% of cases	Write the contributing factors here	In this part, write the complications of the disease	High
Write the risk factors here	In this part, include a brief description	10% of cases	Write the contributing factors here	In this part, write the complications of the disease	Moderate

Disease history



Diagnosis and treatment flowchart



Real life impact

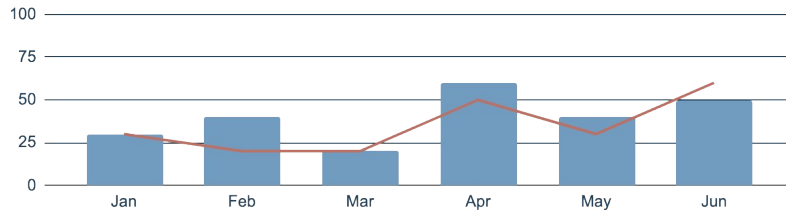
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Disease management

Number of cases of the disease over time

- Describe the trend of the disease cases over time
- Provide key insights or observations about the graph
- Explain any significant changes or patterns in the graph



Region	Number of cases	Percentage of cases
North	1,000	20%
South	2,500	50%
East	1,200	24%

- List the regions or areas that are relevant for the disease
- Enter the number of cases for each region, area or country
- Describe any notable variations or trends among the regions
- Provide additional details or observations about the table

Follow the link in the map to modify its data and then paste the new one here. [For more info, click here](#)

Disease overview and conclusions

Information	
Causes	Introduce in this section your specific information
Symptoms	Introduce in this section your specific information
Diagnosis	Introduce in this section your specific information
Treatment	Introduce in this section your specific information
Prevention	Introduce in this section your specific information

Key findings

- Summarize the most important or relevant aspects of the disease
- Use bullet points to present the key findings in a clear and organized manner

Conclusions

01

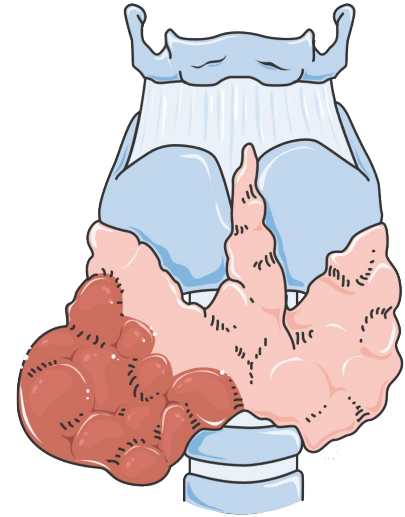
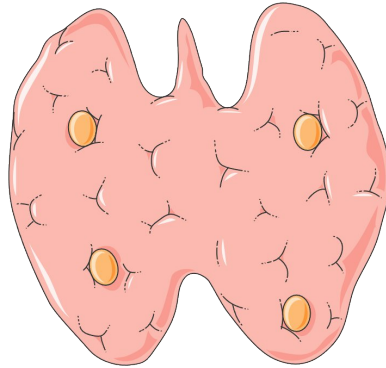
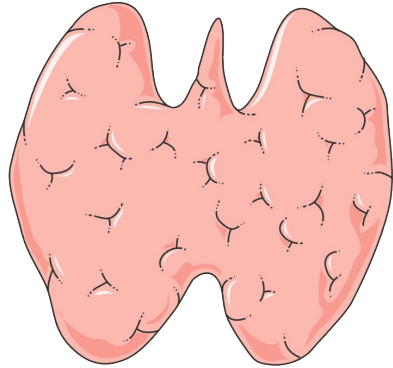
In this section, summarize the key findings from the disease study

02

Provide an overview of the implications for the current diagnosis and treatment plan

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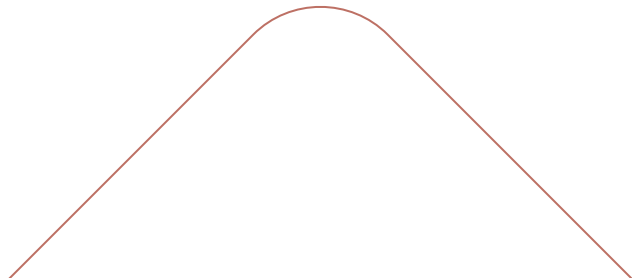
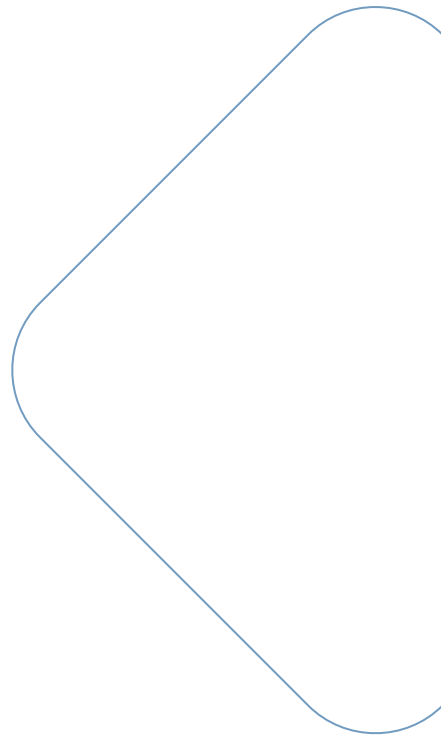
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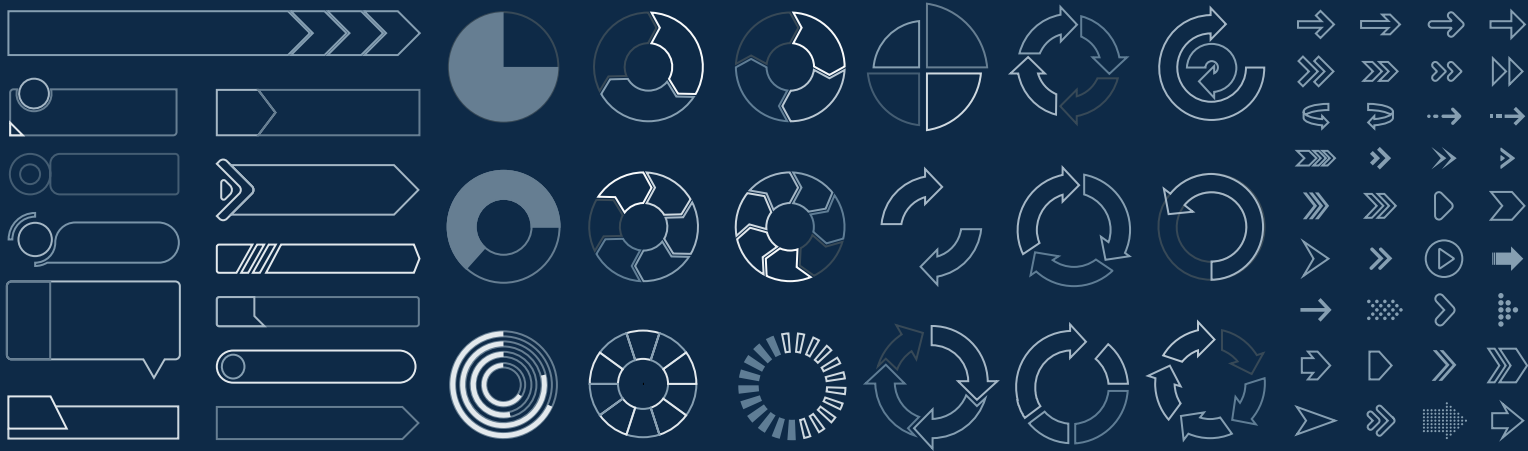
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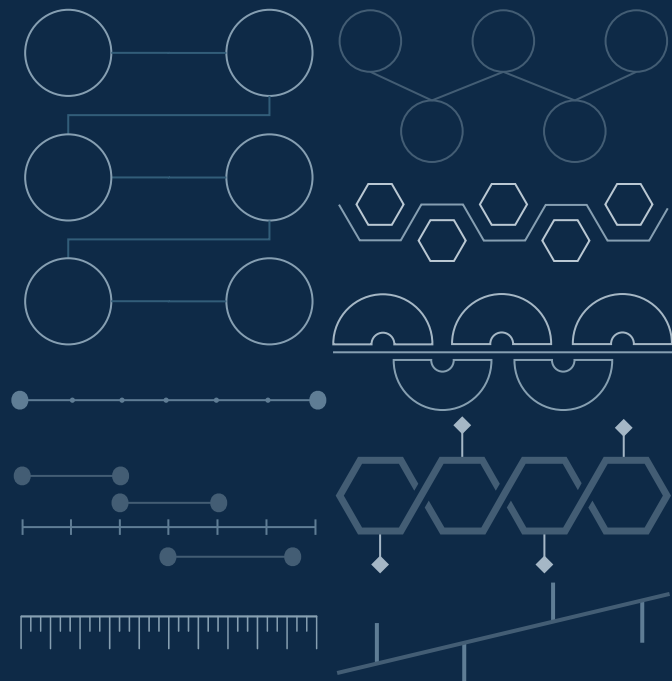
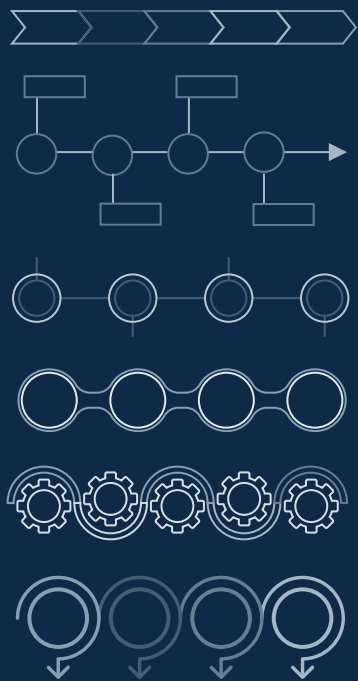
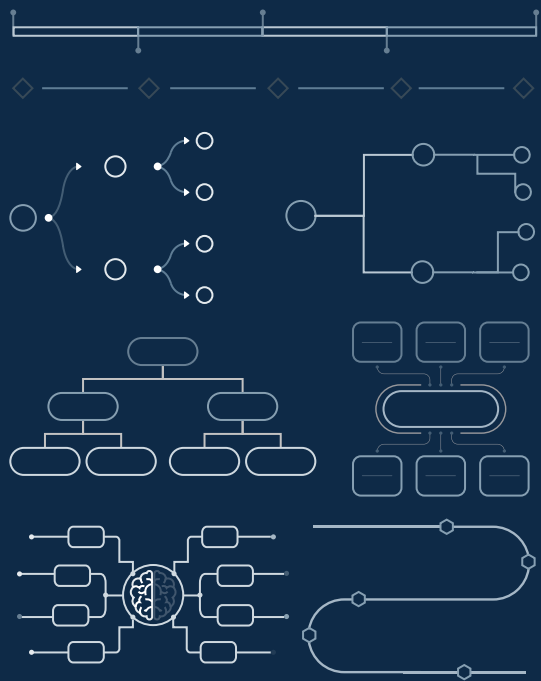
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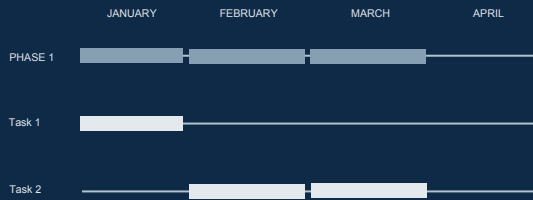
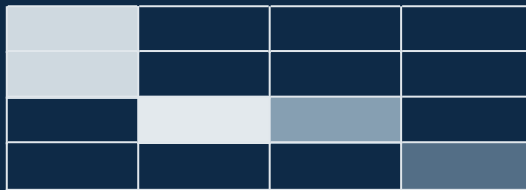
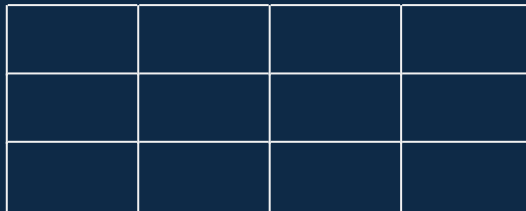
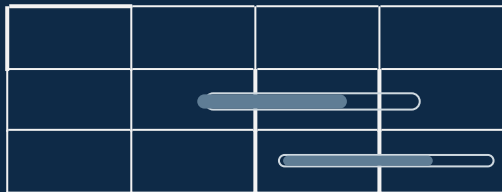
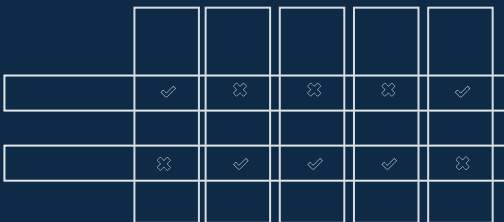
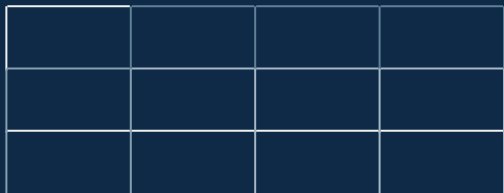
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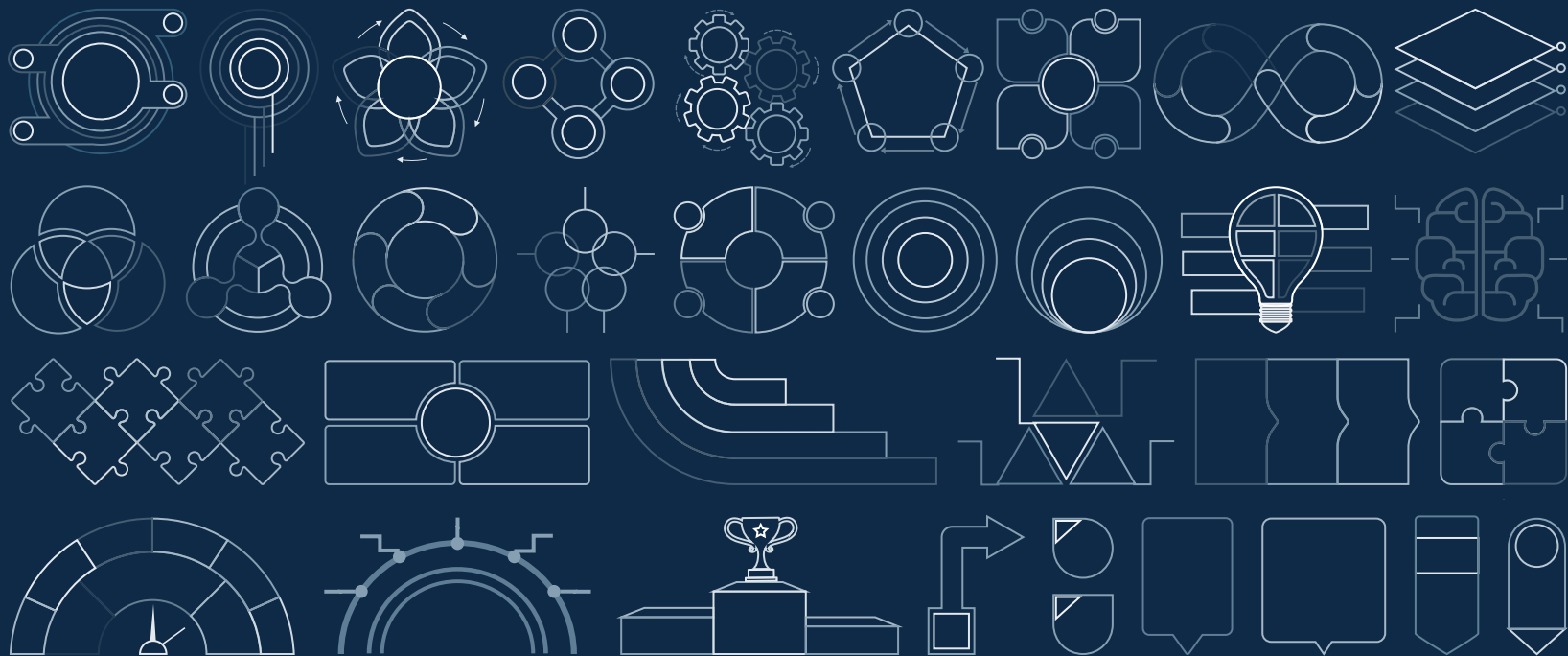
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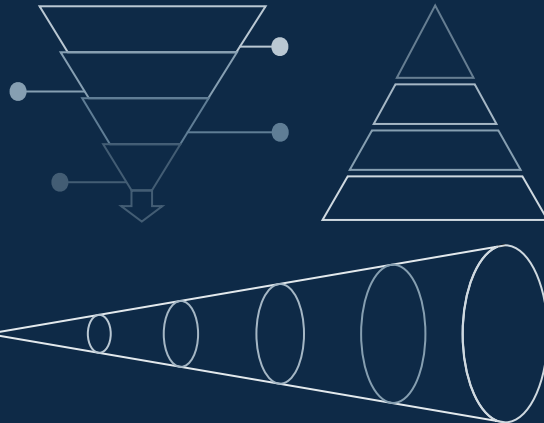
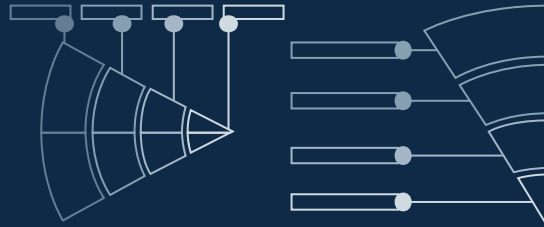
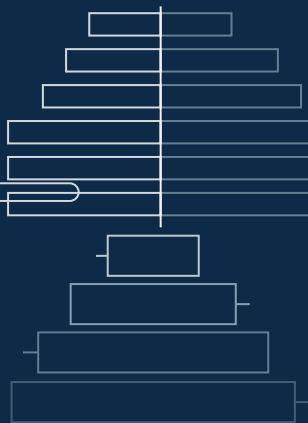
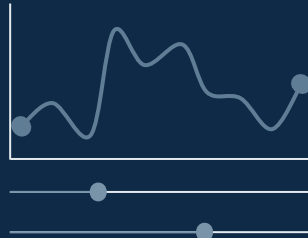
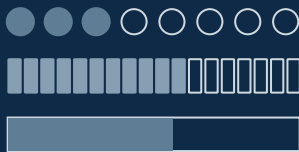
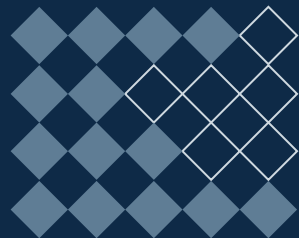
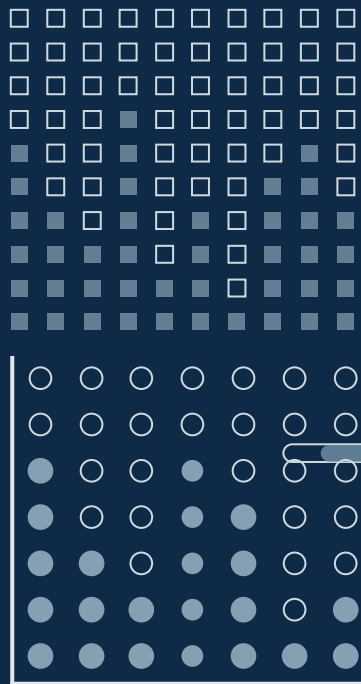












...and our sets of editable icons

You can **resize** these icons without losing quality.

You can **change the stroke and fill color**; just select the icon and click on the **paint bucket/pen**.

In Google Slides, you can also use [Flaticon's extension](#), allowing you to customize and add even more icons.



Educational Icons



Medical Icons



Business Icons



Teamwork Icons



Help & Support Icons



Avatar Icons



Creative Process Icons



Performing Arts Icons



Nature Icons



SEO & Marketing Icons



