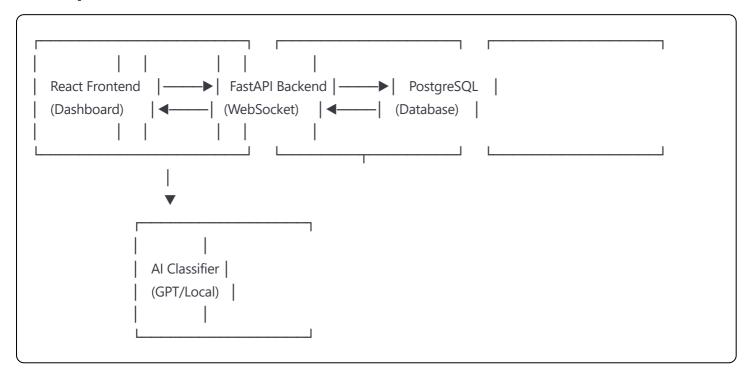
😰 Painel de Controle para Secretaria - Chatbot Clínica

Visão Geral

O painel de controle permite que a secretaria:

- Visualize todas as conversas em tempo real
- Revise agendamentos feitos pelo bot
- Classifique conversas com etiquetas inteligentes
- Intervenha quando necessário
- Monitore métricas e qualidade

Arquitetura do Painel



🦴 Implementação Backend

1. Modelos Adicionais (models/dashboard.py)



```
from sqlalchemy import Column, String, DateTime, JSON, Boolean, Integer, Enum, ForeignKey
from sqlalchemy.orm import relationship
from datetime import datetime
import enum
from app.models.database import Base
class ConversationStatus(enum.Enum):
  PENDING = "pending" # Aguardando revisão
  IN_PROGRESS = "in_progress" # Em atendimento
  COMPLETED = "completed" # Finalizada
  REQUIRES_ATTENTION = "requires_attention" # Precisa atenção
  SPAM = "spam"
                       # Spam/Irrelevante
class ConversationTag(enum.Enum):
  AGENDAMENTO_SUCESSO = "agendamento_sucesso"
  AGENDAMENTO_ERRO = "agendamento_erro"
  CANCELAMENTO = "cancelamento"
  LISTA ESPERA = "lista espera"
  DUVIDA = "duvida"
  RECLAMACAO = "reclamacao"
  NOVO_PACIENTE = "novo_paciente"
  URGENTE = "urgente"
  REAGENDAMENTO = "reagendamento"
  CONFIRMACAO = "confirmacao"
class ConversationDashboard(Base):
  __tablename__ = "conversation_dashboard"
  id = Column(String, primary_key=True)
  conversation_id = Column(String, ForeignKey("conversations.id"))
  phone = Column(String, nullable=False)
  patient_name = Column(String)
  patient_cpf = Column(String)
  # Status e classificação
  status = Column(Enum(ConversationStatus), default=ConversationStatus.PENDING)
  tags = Column(JSON, default=[])
  priority = Column(Integer, default=0) # 0-baixa, 1-média, 2-alta, 3-urgente
  # Análise de sentimento
  sentiment_score = Column(Integer) # -100 a 100
  ai_summary = Column(String)
  ai_suggested_action = Column(String)
  # Métricas
  message_count = Column(Integer, default=0)
```

```
bot_resolution = Column(Boolean)
  human_intervention = Column(Boolean, default=False)
  resolution time = Column(Integer) # em minutos
  # Timestamps
  first_message_at = Column(DateTime)
  last_message_at = Column(DateTime)
  reviewed_at = Column(DateTime)
  reviewed_by = Column(String)
  # Relacionamentos
  messages = relationship("ConversationMessage", back_populates="dashboard")
  notes = relationship("ConversationNote", back_populates="dashboard")
class ConversationMessage(Base):
  __tablename__ = "conversation_messages"
  id = Column(String, primary_key=True)
  dashboard_id = Column(String, ForeignKey("conversation_dashboard.id"))
  sender = Column(String) # "user" ou "bot"
  message = Column(String)
  timestamp = Column(DateTime, default=datetime.utcnow)
  message_type = Column(String) # text, image, audio, etc
  dashboard = relationship("ConversationDashboard", back_populates="messages")
class ConversationNote(Base):
  __tablename__ = "conversation_notes"
  id = Column(String, primary_key=True)
  dashboard_id = Column(String, ForeignKey("conversation_dashboard.id"))
  note = Column(String)
  created_by = Column(String)
  created_at = Column(DateTime, default=datetime.utcnow)
  dashboard = relationship("ConversationDashboard", back_populates="notes")
```

2. Sistema de Classificação Inteligente (services/classifier.py)

python			

```
import re
from typing import List, Dict, Tuple
from datetime import datetime
import httpx
from app.config import settings
import logging
logger = logging.getLogger(__name__)
class ConversationClassifier:
  def __init__(self):
     self.patterns = self._load_patterns()
  def _load_patterns(self) -> Dict:
     """Carrega padrões para classificação baseada em regras"""
     return {
       'agendamento_sucesso': [
          r'consulta agendada com sucesso',
          r'agendamento confirmado',
          r'confirmou.*agendamento'
       ],
       'agendamento_erro': [
          r'erro ao agendar',
          r'não.*consegui.*agendar',
          r'problema.*agendamento'
       ],
       'cancelamento': [
          r'cancelar.*consulta',
          r'desmarcar',
          r'não.*poder.*comparecer'
       ],
       'urgente': [
          r'urgente',
          r'emergência',
          r'dor.*forte',
          r'preciso.*hoje'
       ],
       'reclamacao': [
          r'reclamar',
          r'insatisfeito',
          r'péssimo',
          r'horrível',
          r'demora'
       ],
       'novo_paciente': [
          r'primeira vez',
```

```
r'novo paciente',
       r'não.*cadastrado',
       r'realizar.*cadastro'
    1,
    'duvida': [
       r'quanto custa',
       r'qual.*valor',
       r'convênio',
       r'aceita.*plano',
       r'como.*funciona'
    ]
  }
async def analyze_conversation(self, messages: List[Dict]) -> Dict:
  """Analisa conversa completa e retorna classificação"""
  # Juntar todas as mensagens
  full_text = " ".join([msg['message'].lower() for msg in messages])
  # Análise baseada em regras
  tags = self._extract_tags(full_text)
  priority = self._calculate_priority(tags, messages)
  sentiment = self._analyze_sentiment(messages)
  # Análise com IA (se configurado)
  ai_analysis = await self._ai_analysis(messages) if settings.use_ai_classifier else {}
  # Resumo e ação sugerida
  summary = ai_analysis.get('summary', self._generate_summary(messages))
  suggested_action = ai_analysis.get('action', self._suggest_action(tags))
  return {
    'tags': tags,
    'priority': priority,
    'sentiment_score': sentiment,
     'ai_summary': summary,
    'ai_suggested_action': suggested_action,
    'requires_attention': self._requires_human_attention(tags, sentiment)
  }
def _extract_tags(self, text: str) -> List[str]:
  """Extrai tags baseadas em padrões"""
  tags = []
  for tag, patterns in self.patterns.items():
    for pattern in patterns:
       if re.search(pattern, text, re.IGNORECASE):
```

```
tags.append(tag)
         break
  return list(set(tags))
def _calculate_priority(self, tags: List[str], messages: List[Dict]) -> int:
  """Calcula prioridade da conversa"""
  # Urgente
  if 'urgente' in tags or 'reclamacao' in tags:
    return 3
  # Alta - problemas ou novos pacientes
  if 'agendamento_erro' in tags or 'novo_paciente' in tags:
    return 2
  # Média - ações pendentes
  if 'cancelamento' in tags or 'reagendamento' in tags:
    return 1
  # Baixa - sucesso ou dúvidas simples
  return 0
def _analyze_sentiment(self, messages: List[Dict]) -> int:
  """Analisa sentimento da conversa (-100 a 100)"""
  positive_words = ['obrigado', 'obrigada', 'ótimo', 'excelente', 'perfeito', 'maravilhoso']
  negative_words = ['ruim', 'péssimo', 'horrível', 'demora', 'problema', 'erro', 'cancelar']
  score = 0
  for msg in messages:
    if msg['sender'] == 'user':
       text = msg['message'].lower()
       for word in positive_words:
         if word in text:
            score += 20
       for word in negative_words:
         if word in text:
            score -= 20
  return max(-100, min(100, score))
def _generate_summary(self, messages: List[Dict]) -> str:
  """Gera resumo simples da conversa"""
  if not messages:
```

```
return "Conversa vazia"
  user_messages = [m for m in messages if m['sender'] == 'user']
  if len(user\_messages) == 0:
    return "Sem mensagens do usuário"
  first_msg = user_messages[0]['message'][:100]
  return f"Conversa iniciada com: {first_msg}..."
def _suggest_action(self, tags: List[str]) -> str:
  """Sugere ação baseada nas tags"""
  if 'agendamento_erro' in tags:
    return "Verificar problema no agendamento e entrar em contato"
  if 'reclamacao' in tags:
    return "Priorizar atendimento e resolver insatisfação"
  if 'novo_paciente' in tags:
    return "Orientar sobre processo de cadastro"
  if 'cancelamento' in tags:
    return "Confirmar cancelamento e liberar horário"
  if 'urgente' in tags:
    return "Atendimento imediato necessário"
  return "Monitorar conversa"
def _requires_human_attention(self, tags: List[str], sentiment: int) -> bool:
  """Determina se precisa de atenção humana"""
  attention_tags = ['urgente', 'reclamacao', 'agendamento_erro', 'novo_paciente']
  # Precisa atenção se tem tags críticas ou sentimento muito negativo
  return any(tag in attention_tags for tag in tags) or sentiment < -50
async def _ai_analysis(self, messages: List[Dict]) -> Dict:
  """Análise usando IA (OpenAl/Local)"""
  try:
    # Preparar contexto
    conversation = "\n".join([
       f"{msg['sender']}: {msg['message']}"
       for msg in messages[-10:] # Últimas 10 mensagens
    ])
```

```
prompt = f"""

Analise esta conversa de WhatsApp de uma clínica médica:

{conversation}

Retorne um JSON com:

1. summary: Resumo em uma linha
2. action: Ação recomendada para secretaria
3. category: Categoria principal (agendamento/cancelamento/dúvida/reclamação)
4. urgency: true/false se é urgente

## Aqui você pode integrar com OpenAl ou outro modelo
# Por enquanto, retornamos análise baseada em regras
return {}

except Exception as e:
logger.error(f"Erro na análise IA: {str(e)}")
return {}
```

3. API do Dashboard (handlers/dashboard.py)

python	

```
from fastapi import APIRouter, Depends, HTTPException, WebSocket, WebSocketDisconnect
from sqlalchemy.orm import Session
from typing import List, Optional
from datetime import datetime, timedelta
import json
from app.models.database import get_db
from app.models.dashboard import (
  ConversationDashboard, ConversationMessage,
  ConversationNote, ConversationStatus, ConversationTag
from app.services.classifier import ConversationClassifier
router = APIRouter()
classifier = ConversationClassifier()
# WebSocket manager para real-time updates
class ConnectionManager:
  def __init__(self):
    self.active_connections: List[WebSocket] = []
  async def connect(self, websocket: WebSocket):
    await websocket.accept()
    self.active_connections.append(websocket)
  def disconnect(self, websocket: WebSocket):
    self.active_connections.remove(websocket)
  async def broadcast(self, message: dict):
    for connection in self.active connections:
       try:
         await connection.send_json(message)
       except:
         pass
manager = ConnectionManager()
@router.get("/conversations")
async def list_conversations(
  status: Optional[ConversationStatus] = None,
  priority: Optional[int] = None,
  date_from: Optional[datetime] = None,
  date_to: Optional[datetime] = None,
  search: Optional[str] = None,
  db: Session = Depends(get_db)
):
```

```
"""Lista todas as conversas com filtros"""
  query = db.query(ConversationDashboard)
  if status:
    query = query.filter(ConversationDashboard.status == status)
  if priority is not None:
    query = query.filter(ConversationDashboard.priority == priority)
  if date_from:
    query = query.filter(ConversationDashboard.first_message_at >= date_from)
  if date to:
    query = query.filter(ConversationDashboard.last_message_at <= date_to)
  if search:
    query = query.filter(
       ConversationDashboard.phone.contains(search)
       ConversationDashboard.patient_name.contains(search)
       ConversationDashboard.patient_cpf.contains(search)
    )
  # Ordenar por prioridade e data
  conversations = query.order_by(
    ConversationDashboard.priority.desc(),
    ConversationDashboard.last_message_at.desc()
  ).all()
  return conversations
@router.get("/conversations/{conversation_id}")
async def get_conversation_detail(
  conversation_id: str,
  db: Session = Depends(get_db)
):
  """Detalhes completos de uma conversa"""
  conversation = db.query(ConversationDashboard).filter(
    ConversationDashboard.id == conversation_id
  ).first()
  if not conversation:
    raise HTTPException(status_code=404, detail="Conversa não encontrada")
  # Carregar mensagens
  messages = db.query(ConversationMessage).filter(
```

```
ConversationMessage.dashboard_id == conversation_id
  ).order_by(ConversationMessage.timestamp).all()
  # Carregar notas
  notes = db.query(ConversationNote).filter(
     ConversationNote.dashboard_id == conversation_id
  ).order_by(ConversationNote.created_at.desc()).all()
  return {
     "conversation": conversation,
     "messages": messages,
     "notes": notes
  }
@router.patch("/conversations/{conversation_id}")
async def update_conversation(
  conversation_id: str,
  status: Optional[ConversationStatus] = None,
  tags: Optional[List[str]] = None,
  priority: Optional[int] = None,
  reviewed_by: Optional[str] = None,
  db: Session = Depends(get_db)
):
  """Atualiza status e tags de uma conversa"""
  conversation = db.query(ConversationDashboard).filter(
     ConversationDashboard.id == conversation id
  ).first()
  if not conversation:
     raise HTTPException(status_code=404, detail="Conversa não encontrada")
  if status:
     conversation.status = status
  if tags is not None:
     conversation.tags = tags
  if priority is not None:
     conversation.priority = priority
  if reviewed_by:
     conversation.reviewed_by = reviewed_by
     conversation.reviewed_at = datetime.utcnow()
  db.commit()
```

```
# Broadcast update
  await manager.broadcast({
     "type": "conversation_updated",
     "conversation_id": conversation_id,
     "status": status.value if status else None
  })
  return conversation
@router.post("/conversations/{conversation_id}/notes")
async def add_note(
  conversation_id: str,
  note: str,
  created_by: str,
  db: Session = Depends(get_db)
):
  """Adiciona nota a uma conversa"""
  new_note = ConversationNote(
    dashboard_id=conversation_id,
    note=note.
    created_by=created_by
  db.add(new_note)
  db.commit()
  return new_note
@router.get("/analytics/summary")
async def get_analytics_summary(
  date_from: Optional[datetime] = None,
  date_to: Optional[datetime] = None,
  db: Session = Depends(get_db)
):
  """Resumo analítico do período"""
  if not date_from:
    date_from = datetime.now() - timedelta(days=7)
  if not date_to:
    date_to = datetime.now()
  # Total de conversas
  total_conversations = db.query(ConversationDashboard).filter(
    ConversationDashboard.first_message_at >= date_from,
    ConversationDashboard.first_message_at <= date_to
```

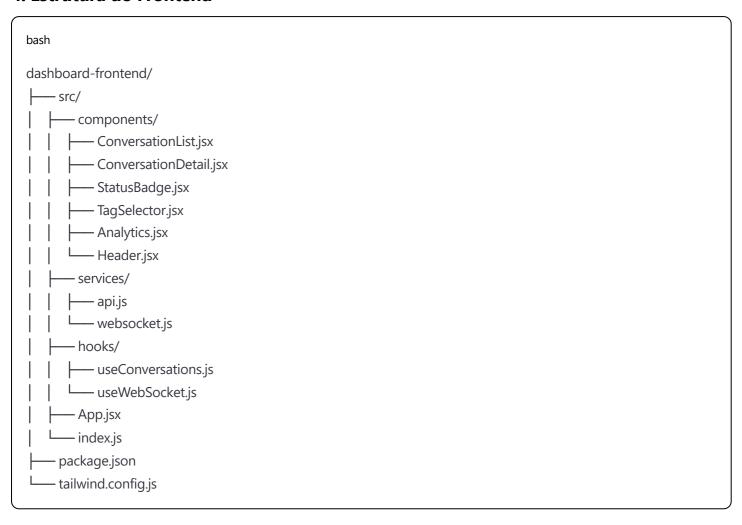
```
).count()
  # Por status
  status counts = {}
  for status in ConversationStatus:
    count = db.query(ConversationDashboard).filter(
       ConversationDashboard.status == status,
       ConversationDashboard.first_message_at >= date_from
    ).count()
    status counts[status.value] = count
  # Taxa de resolução do bot
  bot_resolved = db.query(ConversationDashboard).filter(
    ConversationDashboard.bot resolution == True,
    ConversationDashboard.first_message_at >= date_from
  ).count()
  # Tempo médio de resolução
  avg_resolution = db.query(
    func.avg(ConversationDashboard.resolution_time)
  ).filter(
    ConversationDashboard.resolution_time.isnot(None),
    ConversationDashboard.first_message_at >= date_from
  ).scalar()
  # Tags mais comuns
  # (Implementar agregação de tags JSON)
  return {
    "period": {
       "from": date_from.isoformat(),
       "to": date_to.isoformat()
    },
    "total_conversations": total_conversations,
    "status_distribution": status_counts,
    "bot_resolution_rate": (bot_resolved / total_conversations * 100) if total_conversations > 0 else 0,
    "avg_resolution_time_minutes": avg_resolution or 0
@router.websocket("/ws")
async def websocket_endpoint(websocket: WebSocket):
  """WebSocket para atualizações em tempo real"""
  await manager.connect(websocket)
  try:
    while True:
       # Manter conexão viva
       await websocket.receive_text()
```

```
except WebSocketDisconnect:
    manager.disconnect(websocket)
# Função para processar nova conversa (chamada pelo bot)
async def process_new_conversation(phone: str, messages: List[Dict], db: Session):
  """Processa e classifica nova conversa"""
  # Analisar conversa
  analysis = await classifier.analyze_conversation(messages)
  # Criar entrada no dashboard
  dashboard entry = ConversationDashboard(
    phone=phone,
    tags=analysis['tags'],
    priority=analysis['priority'],
    sentiment_score=analysis['sentiment_score'],
    ai_summary=analysis['ai_summary'],
    ai_suggested_action=analysis['ai_suggested_action'],
    status=ConversationStatus.REQUIRES_ATTENTION if analysis['requires_attention'] else ConversationStatus.PENDIN
    message_count=len(messages),
    first_message_at=messages[0]['timestamp'] if messages else datetime.utcnow(),
    last_message_at=messages[-1]['timestamp'] if messages else datetime.utcnow()
  db.add(dashboard_entry)
  # Adicionar mensagens
  for msg in messages:
    conversation_msg = ConversationMessage(
       dashboard_id=dashboard_entry.id,
       sender=msg['sender'],
       message=msg['message'],
       timestamp=msg['timestamp'],
       message_type=msg.get('type', 'text')
    db.add(conversation_msg)
  db.commit()
  # Notificar dashboard via WebSocket
  await manager.broadcast({
    "type": "new_conversation",
    "conversation": {
       "id": dashboard_entry.id,
       "phone": phone,
       "priority": analysis['priority'],
       "tags": analysis['tags'],
```

```
"summary": analysis['ai_summary']
}
})
```

Prontend - React Dashboard

4. Estrutura do Frontend



5. Componente Principal (App.jsx)

jsx	

```
import React, { useState, useEffect } from 'react';
import ConversationList from './components/ConversationList';
import ConversationDetail from './components/ConversationDetail';
import Analytics from './components/Analytics';
import Header from './components/Header';
import { useWebSocket } from './hooks/useWebSocket';
import { useConversations } from './hooks/useConversations';
function App() {
 const [selectedConversation, setSelectedConversation] = useState(null);
 const [activeTab, setActiveTab] = useState('conversations');
 const [filters, setFilters] = useState({
  status: null,
  priority: null,
  search: "
 });
 const { conversations, loading, refetch } = useConversations(filters);
 const { lastMessage } = useWebSocket(refetch);
  <div className="min-h-screen bg-gray-50">
   <Header />
   <div className="flex h-[calc(100vh-64px)]">
    {/* Sidebar com lista de conversas */}
     <div className="w-96 bg-white border-r overflow-hidden flex flex-col">
      {/* Tabs */}
      <div className="flex border-b">
       <but
        onClick={() => setActiveTab('conversations')}
        className={`flex-1 py-3 px-4 text-sm font-medium ${
         activeTab === 'conversations'
          ? 'text-blue-600 border-b-2 border-blue-600'
          : 'text-gray-500'
        }`}
        Conversas
       </button>
       <button
        onClick={() => setActiveTab('analytics')}
        className={`flex-1 py-3 px-4 text-sm font-medium ${
         activeTab === 'analytics'
          ? 'text-blue-600 border-b-2 border-blue-600'
          : 'text-gray-500'
        }`}
```

```
Análise
 </button>
</div>
{/* Filtros */}
<div className="p-4 border-b">
 <input
  type="text"
  placeholder="Buscar por telefone, nome ou CPF..."
  className="w-full px-3 py-2 border rounded-lg"
  value={filters.search}
  onChange={(e) => setFilters({ ...filters, search: e.target.value })}
 />
 <div className="flex gap-2 mt-2">
  <select
   className="flex-1 px-3 py-1 border rounded text-sm"
   value={filters.status || ''}
   onChange={(e) => setFilters({ ...filters, status: e.target.value || null })}
   <option value="">Todos Status</option>
   <option value="pending">Pendente</option>
   <option value="in_progress">Em Atendimento</option>
   <option value="completed">Finalizada</option>
   <option value="requires_attention">Atenção</option>
  </select>
  <select
   className="flex-1 px-3 py-1 border rounded text-sm"
   value={filters.priority || ''}
   onChange={(e) => setFilters({ ...filters, priority: e.target.value || null })}
   <option value="">Todas Prioridades
   <option value="3">Urgente</option>
   <option value="2">Alta</option>
   <option value="1">Média</option>
   <option value="0">Baixa</option>
  </select>
 </div>
</div>
{/* Conteúdo da tab */}
<div className="flex-1 overflow-y-auto">
 {activeTab === 'conversations' ? (
  <ConversationList
   conversations={conversations}
```

```
loading={loading}
                                   selectedId={selectedConversation?.id}
                                   onSelect={setSelectedConversation}
                               />
                          ):(
                                <Analytics />
                          )}
                        </div>
                   </div>
                  {/* Área de detalhes */}
                    <div className="flex-1">
                       {selectedConversation?(
                            <ConversationDetail
                               conversation={selectedConversation}
                               onUpdate={refetch}
                          />
                     ):(
                            <div className="h-full flex items-center justify-center text-gray-400">
                                <div className="text-center">
                                     <svq className="w-16 h-16 mx-auto mb-4" fill="none" stroke="currentColor" viewBox="0 0 24 24">
                                         <path strokeLinecap="round" strokeLinejoin="round" strokeWidth={2} d="M8 12h.01M12 12h.01M16 
                                     </svg>
                                     Selecione uma conversa para ver detalhes
                                </div>
                            </div>
                     )}
                   </div>
               </div>
          </div>
    );
}
 export default App;
```

6. Lista de Conversas (ConversationList.jsx)

```
jsx
```

```
import React from 'react';
import StatusBadge from './StatusBadge';
import { formatDistanceToNow } from 'date-fns';
import { ptBR } from 'date-fns/locale';
function ConversationList({ conversations, loading, selectedId, onSelect }) {
 if (loading) {
  return (
   <div className="p-4">
     <div className="animate-pulse space-y-3">
      {[...Array(5)].map((_, i) => (
       <div key={i} className="bg-gray-200 h-20 rounded"></div>
      ))}
     </div>
    </div>
  );
 }
 if (conversations.length ===0) {
  return (
    <div className="p-4 text-center text-gray-500">
    Nenhuma conversa encontrada
   </div>
  );
 }
 const getPriorityColor = (priority) => {
  switch (priority) {
   case 3: return 'bg-red-500';
   case 2: return 'bg-orange-500';
   case 1: return 'bg-yellow-500';
   default: return 'bg-green-500';
  }
 };
 const getPriorityText = (priority) => {
  switch (priority) {
   case 3: return 'Urgente';
   case 2: return 'Alta';
   case 1: return 'Média';
   default: return 'Baixa';
  }
 };
 return (
  <div>
```

```
{conversations.map((conversation) => (
 <div
  key={conversation.id}
  onClick={() => onSelect(conversation)}
  className={`p-4 border-b cursor-pointer hover:bg-gray-50 transition-colors ${
   selectedId === conversation.id ? 'bg-blue-50':"
 }`}
  {/* Header da conversa */}
  <div className="flex items-start justify-between mb-2">
   <div className="flex-1">
    <div className="flex items-center gap-2">
     <h3 className="font-semibold text-gray-900">
      {conversation.patient_name || conversation.phone}
     <span className={`w-2 h-2 rounded-full ${getPriorityColor(conversation.priority)}`} />
    </div>
    {conversation.phone}
   </div>
   <StatusBadge status={conversation.status} />
  </div>
  {/* Resumo da conversa */}
  {conversation.ai_summary}
  {/* Tags */}
  <div className="flex flex-wrap gap-1 mb-2">
   {conversation.tags?.slice(0, 3).map((tag, index) => (
    <span
     key={index}
     className="px-2 py-1 text-xs bg-gray-100 text-gray-600 rounded"
     {tag}
    </span>
   ))}
   \{conversation.tags?.length > 3 && (
    <span className="text-xs text-gray-500">
     +{conversation.tags.length - 3}
    </span>
  )}
  </div>
  {/* Footer */}
  <div className="flex items-center justify-between text-xs text-gray-500">
   <span>{conversation.message_count} mensagens/span>
```

```
<span>
        {formatDistanceToNow(new Date(conversation.last_message_at), {
         addSuffix: true,
         locale: ptBR
        })}
       </span>
      </div>
      {/* Indicador de atenção necessária */}
      {conversation.status === 'requires_attention' && (
       <div className="mt-2 px-2 py-1 bg-red-100 text-red-700 text-xs rounded">
        ▲ Requer atenção imediata
       </div>
     )}
     </div>
   ))}
  </div>
);
}
export default ConversationList;
```